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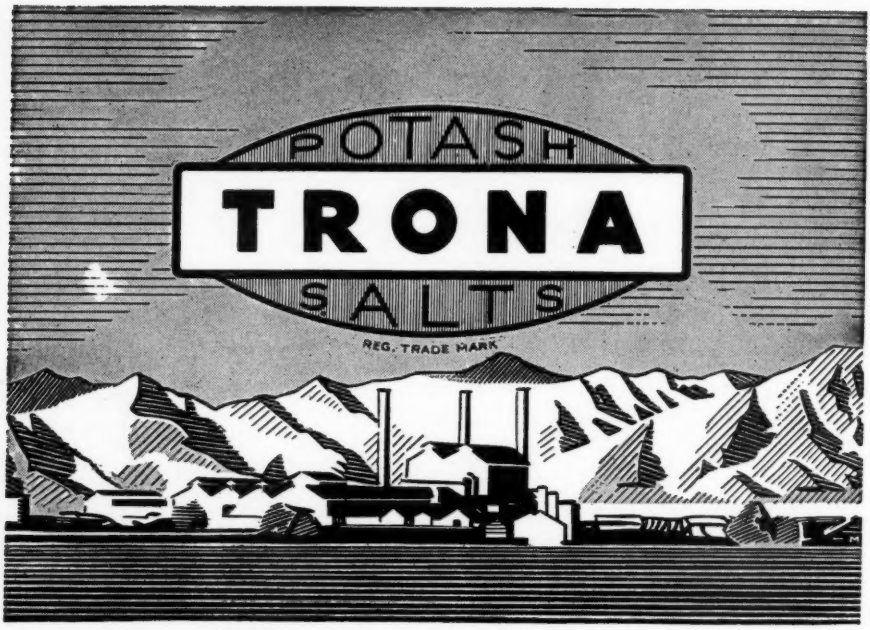

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R. H. STINCHFIELD, *Editor*

Editorial Offices: Investment Bldg., Washington, D. C.

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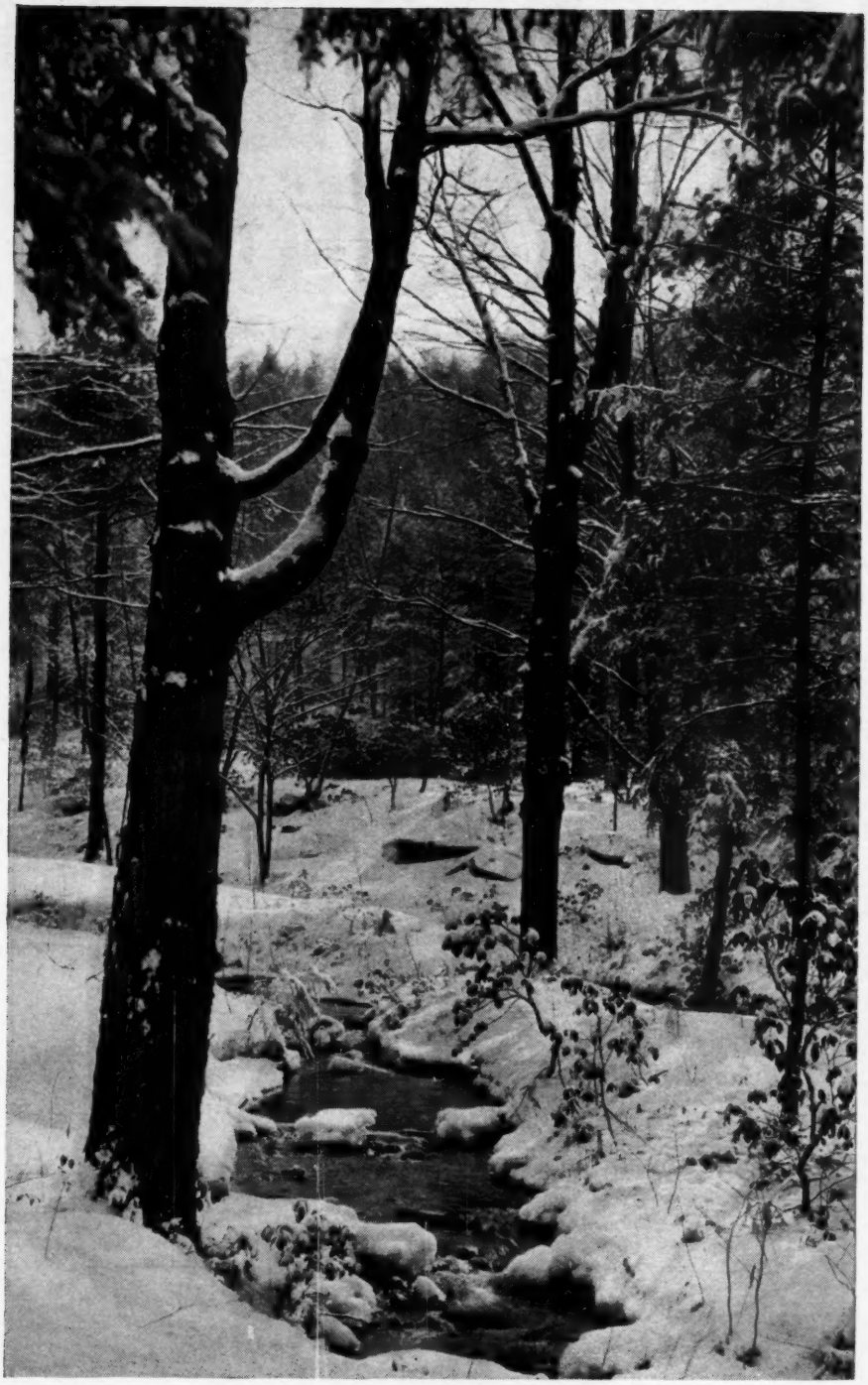

THE PEACE AND REPOSE OF THE SEASON

Better Crops with Plant Food

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Vol. XXI WASHINGTON, D. C., DECEMBER 1936 No. 2

The Happy Huskers' Holiday

Jeff McDermid

THIS has been a delightful holiday season for that well-established bucolic fraternity of Corn Corners, known as the Happy Huskers' Club. In several years of personal contact with its membership, I can testify that there has seldom been quite so jolly a spirit pervading the group as governs it now.

Good humor follows them in their late fall tasks of shredding, barn choring, and steer feeding; and even penetrates into the more savory environs of the culinary cloisters, where their ruddy wives pluck geese, stew cranberries, and mix puddings in anticipation of the usual effect which bitter winds have on agricultural appetites.

The golden glow hovering about the Corn Corners Happy Huskers traces to the treat in store when they hold the annual Yuletide-New Year festival at the district school—an event to which the whole community turns as surely as a calf to the milk pail, but I hasten to add, with a trifle more evidence of generosity and party manners.

For this time the committee has staged a glorious new idea, a sort of Christmas remembrance done in original style in pleasant yet bantering tribute to some of the moving spirits of the countryside who have done yeoman service to the great agrarian cause. But before dipping into the details as hatched up by the ingenious plotters, let us acquaint ourselves with the officers of the Happy Huskers'

Club and relate some highlights of its history.

For a decade the chairman of the club, known as the Top Tassel, has been none other than "Prolific" Hastings, who by the way is a bachelor. The club custodian and keeper of the scroll, rustling in autumnal winds, has always been "Early" Leaming, whose home is adjacent to the meeting place and who keeps things shipshape in advance of every conclave. Neal Paymaster is the treasurer of the Happy Huskers, and being a descendant of Aberdeen, he is a far better retainer than a diffuser of the dividends.

Every club worth the name must have a sergeant at arms, and so for time immemorial this duty of dignity has reposed in the safe keeping of the august "Kernel" Krug, widely known for his large and popular family. The board of directors, who really sometimes direct a few things, consists of Y. D. Reid, old "Silver" King, Flint Longfellow (no relative of the poet), "Purebred" Casey, Bumper Murdock (some traveler by the way), D. R. (Drought Resistant) Reese, and T. E. (Two Ear) Piedmont.

I am sure you will agree, if you are really up to snuff on such things, that with this aggregation in charge, the affairs of the Happy Huskers are well on the road to recovery, whichever way you may have voted. In none of the ancient and honorable annals of American "planting-prudence" has there been a set of officers more fitted to keep things well cultivated. In fact, we might even nominate them for the hall of fame, if there were a hall big enough.

SCANNING the archives of the club over the denim-clad shoulders of Early Leaming, I am able to advise you that the name the club now bears is not its original one. In fact, this commonsense cognomen has only emerged within the past year or so. I shall digress to point out from the minutes kept by Leaming himself, by just what processes they arrived at this final selection.

"Away back when" this club was organized (as all farm societies must be, of course, or the talking talents of some folks would go for naught) the title they bore was a stilted one. It must have come from some old McGuffey reader or a wall motto left in a legacy and discovered in an attic. It smacks of rugged individualism and is as independent as wind-pollination itself.

FROM 1920 to 1930, to be exact, they called themselves the Corn-u-copia or Horn of Plenty Club. Then, because of certain adverse economic situations of which we have a remote recollection, the title was voted on in 1931 and altered to Corn-u-burnia or Horn of Dilemma Club. During the next three seasons it was found advisable to shift again, this time to Corn-u-contract or Horns to Hook 'Em Club. Then, after Neal Paymaster had handed out a few helpful checks, and a series of big dry spells "advented" among them, the cronies made one more quick repair job, calling themselves the Corn-u-needa or De-Horned Club.

About that time one of the neighborhood girls came home from college imbued with the modern idea of simplicity in literary architecture and the removal of cupolas, etc. So the women took a hand and vowed they would strike unless the menfolks came back to Yankee common sense. Hence we have again the kind of club name we can all endorse, at least because we can all pronounce it. A unanimous vote was taken by the lodge, and "Happy Huskers" it will be forevermore, and then some!

Now this same helpful lassie, Silky Krug, is also almost entirely responsible (because of her normal school

courses) for the program which the club is about to spread upon your holiday horizon. And with good fortune before us, we may be able to repeat other better ones in months to come, as time and season dictate.

Together with Zea Mays, another bright daughter of the Happy Husk-

ers, Silky set up a Christmas tree in the schoolhouse with the help of the neighborhood boys. It was trimmed with braided husks strung together and dipped in dyes, and they added cobs covered with glue and sprinkled with tinsel set upright on the branches like tall candles.

THEY had little Nubbin Hastings dressed up like a gnome to hand out the various 10-cent-store presents, drawn in the form of a lottery, tickets being given out with each tray of eatables. The small group of invited honor guests came late and found seats toward the front reserved for them right near old Grandpaw Murdock.

After the harmonica band had rendered as many pieces as everybody could stand, Prolific Hastings cleared his husky throat and said it was their privilege, after many years of obligations to "certain sterling citizens," to be in a position to leave with each one a fitting testament of regard and devotion.

"I NOW request Hybrid Johnson to step up here like the good county agent he is and get his just deserts."

Meanwhile, Early Leaming bobbed up on the platform with a parchment made out of ironed corn shucks pasted together and brush-lettered in water colors. In fact he had a heap of these separate testimonials tied with ribbon ready to give each of the guests. Turning to Hybrid, he read the first quotation, prefacing his remarks with the information that the girls had got all these sentiments from the Bible—just to make sure that those in the audience would recognize their source. "If you have anything to say afterwards, do it then or forever hold your hosses," declared Leaming, as he read:

From Joel, Chapter Two: "And the floors shall be full of wheat, and the fats shall overflow with wine and oil; and I will restore to you the years the locust hath eaten, the cankerworm, and the caterpillar. . . . And ye shall eat in plenty and be satisfied."

Accepting the scroll, Hybrid smiled and said: "My only reply is a genuine thanks for this warm sentiment, indicating that I have labored to help you farm better. But my only criticism is that perhaps county agents nowadays devote a little more time by comparison to organization and marketing work among farmers instead of so much production. But, on the other hand, some of them have gone a little too far afield in economics and let the fundamentals sort of worry along alone. I'll try to do both."

After each party received his trophy, the Happy Huskers arose and shouted their fraternity yell:

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Fig. 1—A fertilized field in Saskatchewan showing what happened when one drill width was left unfertilized.

Fertilizer Distributors For Seed Drills

By Dr. R. E. Neidig and R. S. Buckman
Calgary, Alberta, Canada

Editor's Note: The accurate distribution of fertilizer in small quantities especially is a problem in such areas as the newer fertilizer areas in the West. Therefore any information of machines which will distribute less than 100 pounds per acre is of interest.

A COMPREHENSIVE experimental program carried out on the Canadian prairies during the years 1927 to 1930 by Industrial Companies, governmental agencies, and farmers proved that fertilizers, when drilled in directly with the seed, not only produced profitable increases in yield, but usually produced higher quality cereal crops in years of early fall frosts, and rusts. An earlier maturity of 6 to 10 days for wheat, and 8 to 14 days with barley, was readily secured. The selection of earlier maturing varieties, combined with proper fertilization, lessened the danger of loss in lowered grades of cereal crops. Experimental work also proved conclusively that under Canadian conditions fertilizers drilled in with the seed were more effective than broadcasting. In fact, due to climatic conditions, fertilizers broadcast often failed to show effects until the following year, and even then they did not produce as good results as when fertilizers were drilled in with the seed.

After proof of the economic value of fertilizers was established in 1930, grain prices receded to such low levels that many farmers who desired to use fertilizers were unable to purchase new combination fertilizer and grain drills to replace their ordinary drills, many

of which were in good repair. In eastern Canada combination grain and fertilizer drills were made for low analysis fertilizers; these distributed between 200 to 1,200 pounds per acre. Western Canadian prairies, because of long freight hauls, demanded a concentrated high-analysis fertilizer in order to lower the cost of plant food and enable the farmer to use it even in years of low grain prices. It was evident that to enable the farmers to use fertilizers, an attachment capable of accurately distributing fertilizers at the rate of from 30 to 40 pounds per acre would be necessary before their use would be wide-spread.

Some conception of what these small applications of high grade fertilizers really mean when distributed in the soil can be gained from the fact that using an ordinary application of 35 pounds per acre, the amount of fertilizer fed is less than one-half ounce per 100 feet of seed run, corresponding to about a thimblefull per one rod row evenly distributed.

There were no combination fertilizer and grain drills owned by the western farmers, whereas practically everyone who grew grains at all had a seed drill; and although thoroughly convinced that fertilization had become necessary for successful cropping, the high initial outlay required in discarding the seed drill and replacing this with a combination drill deterred many from using fertilizers.

From all sides came insistent demands for a fertilizer attachment which could be applied to an ordinary grain drill, and which would apply fertilizer similar in principle to a grass-seed attachment sowing grass seed. Some farmers even tried putting fertilizer through the grass-seed feeds, but it was soon found that this was no more successful than mixing the fertilizer with the grain. In neither case was the mechanism capable of handling fertilizer, and it was apparent that an entirely new mechanism would have to be built if a suitable attachment for the ordinary grain drill was to be successful for applying high-grade fertilizers.

New Mechanism

This problem was first taken up seriously by The Consolidated Mining & Smelting Company of Canada, Limited, in 1931, because it was felt if any real headway was to be made in the distribution of fertilizers to the already fertilizer-hungry Canadian prairies, a market would have to be assured sufficient to induce makers of seed

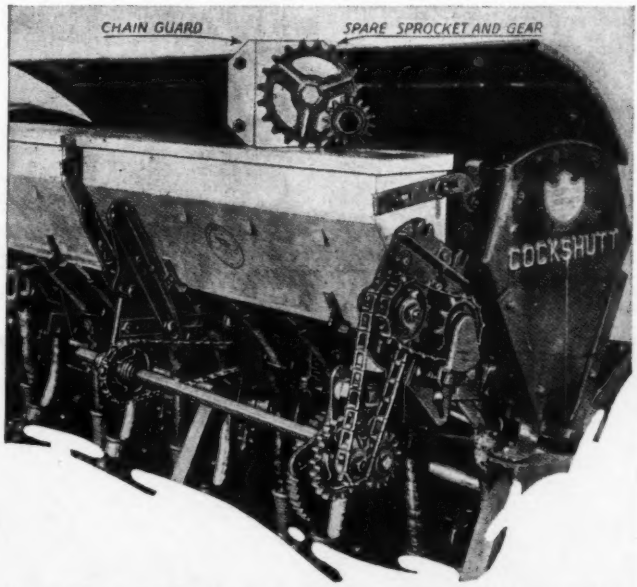

Fig. 2—New fertilizer distributor which can be attached in less than an hour to any make of seed drill without the use of special adapting parts.

drills to consider manufacturing fertilizer attachments suitable for mounting on their existing drills.

This company had not progressed far until the magnitude of the problem became apparent. One attachment to fit the larger number of different makes of drills and the various sizes and styles in which these machines were made appeared to be an almost impossible task. By the spring of 1932, however, an attachment had been developed capable of being fitted to any make or size of seed drill. True, it carried a separate set of adapting parts to suit every drill; it was heavy and cumbersome, but it distributed fertilizer better than any other machine on the market at that time, and between 1,200 and 1,500 of these were placed in service that year.

Adjustments Made

The machine was mounted forward of the grain box, which necessitated replacing the ribbon grain tubes with new ones carrying a cup with an entry for the fertilizer tube. Complete with fertilizer the machine added between 550 and 600 pounds to a 20-run seed drill, and in consequence some users complained of the added weight and the neck-yoke load on horse-drawn drills.

In 1933 this attachment was redesigned and made adaptable to the rear of the grain box, the adapting parts for the drill were greatly simplified, and the machine made much more weatherproof.

There was no reduction in weight, but as it was mounted behind the grain box the complaint of added weight to the necks of the horses was removed. However, it still required about a full day to alter the drill and mount the attachment thereon. This type of machine was marketed in 1933 and 1934, and although a great saving was effected to the user over purchase price of a new combination drill, it was felt that a simpler, less cumbersome machine, and one which could be sold lower in price, was necessary before real progress could be made in a more universal use of fertilizers.

During these years continued experimental work had been going on both on fertilizers and on attachments to distribute them. In the case of the former, processes were developed

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Fig. 3—An unfertilized drill width in a fertilized barley field in southern Alberta.

Pasture or Forest?

By Ford S. Prince

Agronomist, New Hampshire College of Agriculture, Durham, New Hampshire

THE northeast is a tree country. After the trees are cut, grasses grow naturally, but it is "the hay and pasture belt" only if conditions are right and when man interferes with the processes of nature.

When these natural processes are allowed to proceed in a normal way without human hindrance, bushes, shrubs, and trees begin to inhabit the landscape. And possess it they will, unless the human element enters the picture.

Trees and bushes are deeper rooted than the cultivated or natural grasses and clover, and they are able to survive and thrive at a fertility level upon which hay and pasture plants will starve to death. If left to her own devices, mother nature, by reforestation, even builds up the fertility of the soil by accumulating from the litter in the upper layers of the soil what these trees have brought from the subsoil strata, so that when the next crop of timber is cut the soil will again produce good crops.

This process of reforestation presents a constant struggle to the farmers of the region. It is particularly evident in pasture management where shrubs and bushes are most likely to get a foothold because of lack of mowing and other control measures.

"How can I get rid of the bushes in my pasture?" This is a question that has been asked by hundreds of farmers who have evaded the soil fertility angle to the matter, believing that cutting in August or in the dark of the moon is the answer. Or perhaps they hope that some mysterious chemical will be evolved which will kill the shrubs and stimulate the grass to better growth. The latter is within the realm of possibility, of course, but cutting in August or any other month is a palliative that only staves off the evil day when the job will have to be done all over again.

Prevention and Control

The simplest way to prevent shrubs and brush and other weeds from gaining a foothold in a good pasture is to stimulate the grass to luxuriant growth with fertilizer and let the cows do the mowing. The easiest way to control brush after it has started is to eradicate it in some manner and simultaneously fertilize the sod, so that proper fertility is established for the grasses and pasture clovers. Under this situation it may be well to keep a weather eye upon the bush survivors to see that they do not again occupy the center of the stage. This may mean repeated cutting until the bare spaces in the areas where the shrubs stood are again filled in with pasture plants, so that natural control will be secured.

If the brushy pasture is tillable, plowing may be the easier method. But bushes will come again unless their appearance is intercepted by proper soil fertility after plowing and reseeding. This means frequent fertilization.

Just as it is with business, or stock market values, or beef cattle prices, there is a natural cycle in progress here with respect to this matter. The easiest thing to do is to allow brush to grow. To prevent this is more difficult and less well understood.

If the farmer is to maintain a good pasture he must take a stand, for the

The first phase of pasture deterioration, with junipers scattered on the grass area.

balance of fertility is always against the soil. Even though cows are fed heavily upon grain while on pasture, their droppings are not evenly spread, and the organic substance of the manure never becomes incorporated with the soil. Where the droppings lie the grass is not eaten, and the remainder of the pasture area suffers for want of the elements the cows remove in the grass they eat.

Starved Roots

Overgrazing is another major cause of pasture deterioration. When pastures are constantly overfed the root systems of the better species are not properly nourished and fail to support a luxuriant top growth. This presents an opportunity for weeds of all sorts to come in with little competition, and once they become established they persist because livestock refuse, in most cases, to eat them.

Because of overgrazing and declining fertility, desirable plants, such as Kentucky Blue Grass and White Dutch Clover, gradually disappear. With the discontinuance of the clover the soil becomes less productive, bent grasses are replaced by poverty grass, and then hardhack, sweet fern, junipers, and other shrubs make their appearance. In the shelter of these bushes, birch and larger species gain a foothold; then comes pine in white pine areas, or spruce and fir in locations where these species are adapted, or hardwood species in situations best suited for them.

Thus by various gentle stages the pasture reverts almost imperceptibly to forest. So gradual is the change that farmers usually do not fence off these areas where the trees have come in, but allow their cattle to range over the fields as before, even though little feed is there to reward them for their physical efforts in getting it.

Whether these reforested areas should be fenced and the cows confined to fields in which grazing is better becomes a problem of economy, and should be answered by the dairyman from the standpoint of his cows. It may be difficult to figure out the answer immediately in terms of dollars and cents, but a fair approximation can usually be made by keeping account of the expense for feed during the summer months. Unfortunately, on many farms the outlay for summer

Junipers on the increase in spite of the heavy soil which gives a remarkable response to fertilizers and is ideal for pasture grasses and White Dutch Clover.

feed is practically as great as it is in the winter. This is especially true on farms where no attempt has been made to get better pastures and can lead to but one conclusion, that the pasture is no longer a pasture, but a woodlot, even though it may be an incipient one.

When should the woodlot be fenced? What is a woodlot? What is a pasture? These are important questions on many farms where bushes and trees have encroached upon the area of grass that is available to the cows. It may not be necessasry to formulate a definition of what consti-

tutes a woodlot or to draw a distinction between the pasture and the woodlot, but it is vital for the farmer to recognize pasture deterioration and to do something about it for the benefit of his cows and for his own financial gain. On a reasonably good sod an expense for fertilizer is more justifiable than for feed, because it is more profitable.

Perhaps it might be well to allow the forester to tell what constitutes a woodlot. So far as a pasture is concerned, it may well be defined by carrying capacity—at least this factor will probably determine whether a top-dressing schedule will be sound from the financial point of view on pastures that cannot be easily worked. If they are tillable, free from stone and bushes, that is quite another matter, for organic matter and fertilizers can then be incorporated easily with the soil.

On rough pasture land it appears that if the carrying capacity is less than one cow to 4 acres, the economy of top-dressing is doubtful. With that carrying power, a top-dressing schedule can be depended upon to double the pasturage the first year, or bring it to one cow to each 2 acres. With repeated efforts in this direction the carrying capacity should be further increased.

To encourage desirable grass and clover species it is necessary in the beginning to use a complete fertilizer, just to make certain there will be no limiting element to militate against the success of the procedure. The most popular fertilizer for this purpose presents a 1-2-2 ratio in a 4-8-7, 4-8-8, or the double strengths of these materials in amounts sufficient to carry from 20 to 40 pounds of nitrogen and twice that amount of phosphoric acid and potash. The exact amount to apply should be governed by the need for feed and by the extent to which deterioration has progressed. Economy rules that the thinner sods should receive smaller quantities until some improvement is noted.

Junipers fairly covering the ground, with pines coming in in the shelter of the shrubs.

Watch Response

Further top-dressings should be governed by the response secured from the initial application both in amount and formula. If the original treatment stimulates the Dutch Clover to a thick stand, future nitrogen applications may be cut down or eliminated on farms where an extra June flush of feed is not desired. If the soil is not heavy enough to produce Dutch Clover, the nitrogen content of the fertilizer should be maintained or increased to a 1-1-1 ratio, or a nitrogen carrier may be used in alternate years with a 1-2-2 fertilizer ratio in the others.

Practically all these northeastern soils are sour and should eventually be limed. Whether a farmer limes his pasture in the beginning of his improvement program will depend upon his financial position. If funds are available, lime should be applied in amounts not to exceed 1 ton of ground limestone per acre. But if there are funds but for one operation, fertilizer should represent the first purchase.

There are a limited number of situations in New England and many outside where a good job of pasture improvement can be accomplished by using lime and superphosphate. On such soils the potash availability is probably high, and the clover which is stimulated helps the grass because of its nitrogen accumulation power. Over most of New England and in certain

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What Makes the Red Hills Red

By T. S. Buie

Regional Conservator, Soil Conservation Service, U.S.D.A.

ANYONE can see while driving through the Piedmont that erosion is the destroyer of the rolling lands of the South. The greater part of the topsoil already has been carried away, and where deep gullies are not present they are rapidly forming. As the topsoil gets thinner and the gullies deepen, crops and profits become smaller and smaller. Then families go broke and must abandon their farms. Gullies and abandoned homes seem to go together, for where gullies are found, usually abandoned homes are nearby.

It would be interesting if by some magic stroke we could turn back the flight of time and find ourselves in the days of 2 centuries ago when this was virgin country.

The exploitation of virgin land was then just beginning. Cities were springing up along the coast. Always when cities grow, as these did, some of their inhabitants tire of congestion, look for an outlet, a place where they can stretch their limbs and build anew. These adventuresome souls are happy only when they can take nature's offerings and construct new farms, new towns.

From settled areas of the Coastal Plain these restless souls journeyed upstream by boat and afoot until in the Piedmont they met similar adventurers from the North who traveled by wagon train from Pennsylvania and Virginia until they found a country to their liking. From these two sources, where an increasing population encouraged movement to new areas, came the Piedmont stock of the Carolinas, Georgia and Alabama. There were some among these first settlers who took the trouble to describe in writing what they saw. These early writers pictured the virgin Piedmont as a country of rolling hills covered with forests of sparkling clear

Terracing is practiced by this Virginia farmer. The picture shows a terrace channel being finished with a plow.

streams, of extensive glades and meadows. Indians and game ranged the countryside, content with nature's bounty. For ages unknown they had occupied the land without so much as inducing the ruination of 1 acre. The Indian never cleared more than a small patch of the fertile bottomland.

Not so the early white settlers. As Will Rogers said, "they took their gun, axe, and plow and carved their homesites from the wilds."

Gun, axe, and plow. Think for a moment of those three instruments of human ingenuity. They have been the arch enemies of virgin country. A gun to shoot the game, an axe to chop down the trees, a plow to lay the soil open and a prey to erosive forces.

The level areas, the glades near the streams, were the first to be cultivated. Such fields were extremely productive, but as families grew up and more families moved in, that type of soil was insufficient to support the population. Less suitable areas were cleared and put into production.

General William Richardson Davie described the situation as it existed in those days in an address to the South Carolina Agricultural Society. As President of the Society he said on December 8, 1818:

"A large proportion of this extensive and once fertile range of country has been cleared for cultivation, in a kind of succession extremely unfavorable to the preservation of its fertility. The means of the first settlers were generally confined to their own personal efforts. Removing the timber and fencing the land were an appalling effort to a single individual. A few acres, commensurate only with the demands of immediate subsistence, were cleared; these were cultivated until they were nearly exhausted, when another effort was made, and another field added. When this was also worn out, they had recourse again to the woods, and no means were used to preserve the new additions from exhaustion or to restore the old-worn-out land."

Forced Westward

Branches of many Southeastern families moved westward as soils became too badly eroded to produce a livable income. Few are the old families of the Carolinas which 50 to 150 years ago did not divide with some members moving west.

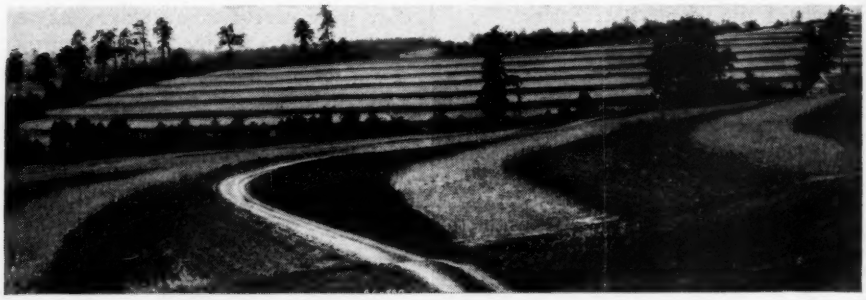
So the falling rain on unprotected fields has been one of the factors to send families on until the new land is practically exhausted.

Those settlers could and did treat their fields like we treat an old pair of shoes. They just discarded them when they wore out. That was pos-

Bench terraces on steep Georgia hillsides, together with the practice of strip-cropping, prevent soil losses from erosion.

sible because new land was abundant. Now it isn't possible. We can still get good new shoes but we can't get good new land. And many of us can't even get new shoes because our land doesn't produce the wherewithal.

be paid for with the proceeds of a cotton crop. Each farm was a self-contained unit, self-supporting, which meant the planting of abundant areas of feed and hay crops and pastures, with the amount of cotton limited



Strips of close-growing crops between strips of cultivated crops prevent washing on hillsides and have proven successful in combating the erosion problem. This is a South Carolina field strip-cropped with wheat and cotton. The strips follow the contour of the land.

It is certain that erosion started as soon as the first hillsides were cleared. That is accelerated erosion, the type that cuts gullies and carries away the fertile topsoil. Of course, ever since this earth of ours has been in existence, erosion has been going on. This has been a very slow process described as geologic erosion. By this process soil forms and is removed so slowly the change scarcely can be observed. It is estimated that it takes about 600 years for nature to make an inch of topsoil in the Piedmont by this process, yet that's as fast as the topsoil would wash away under natural conditions. In other words the soil doesn't wash away any faster than it's built up until man comes in with the axe and the plow.

Fortunately for the sake of the soil, the type of agriculture practiced by our colonial ancestors by necessity was of a subsistence nature. Food for the landlord and slaves as well as feed for the livestock was the first necessity. There were no trains or trucks to transport corn and hay from the Midwest or fruits and vegetables from Florida—even had there been a Midwest or Florida as we know them—to

to that in which the lint could be separated from the seed by hand.

A little later in our history the cotton gin came along to stimulate the clearing of new land. The gin made it possible to produce and handle a much greater quantity of cotton. Farming became more of a commercial venture and enterprise from which money could be made, rather than a manner of living. So the hillsides were put into cultivation, first the very gentle slopes, then the steeper ones. A place had to be found to plant cotton.

Cotton Is King

Cotton was crowned King in the Southland many years ago, and his true followers have paid homage to him. Fortunes have come to those who handled and marketed cotton as well as to those who produced it. Like human rulers King Cotton made many demands upon his subjects. The eroded fields of our fair Southland bear silent testimony to the homage exacted by this King. The farmers of today, faced with declining yields of their chief cash crop, realize at what cost this system has been followed.

For a long time many southern farmers have had the idea that cotton is easy on the soil. It removes just a little plant food they say, because the greater part of the plant is turned back to the soil. This is a great fallacy, tected through the winter months, the period of heaviest rainfall.

A few recognized the dangers of erosion almost 100 years ago. Writing in 1843 Ed Ruffin called attention to the loss of soil from cultivated fields

Left: On this land CCC workers have built brush dams for the control of gullies. Eventually trees and vegetation will help nature rebuild. Right: Kudzu or "porch vine" used to stabilize gullies and on badly eroded fields also provides excellent forage. Since it is a legume it enriches soils that are very erodible.

particularly on sloping fields. Even if the cotton lint itself removes but a comparatively small amount of plant food, erosion takes a vast quantity as it washes away the topsoil left unprotected after cotton-picking time. Still worse, gullies eat into fields, their tenacles spreading like the tributaries of a stream, leaving ugly scars and useless fields. If the loss were restricted to plant food it would be much easier to replace. You can buy plant food in a sack. But topsoil is formed only through the long, slow processes of nature and cannot be restored to a field when once lost.

What makes erosion such a problem in the South? First the physical character of the soil itself. A friable soil, once the protective cover is gone it washes easily, gullies form, and the sides crumble. There falls annually 200,000 cubic feet of water on every acre every year. Most of that water runs off the surface. In the Piedmont country it flows 500 feet downward in a distance of 100 miles. And finally cotton and other clean cultivated crops are grown extensively. Vast acreages are left entirely unpro- and suggested methods for reducing this loss. But if we observe the gullied hillsides, abandoned farms, and deserted colonial mansions that once sheltered the fairest of the South, then we must conclude few took action against the forces of erosion.

Problem Demands Attention

Sons of the South have been praised for their bravery. The hardships undergone following the invasion of armies is well known. But the invading soldier destroyed only that which had been produced or developed. His destruction was temporary compared to the destruction caused by erosion. He did not destroy the very means to produce and develop.

Yet we should not be too severe in the criticism of our ancestors who first lived in the Piedmont section. They didn't realize what damage they were beginning. They knew always that they could move on to new land as soon as the old failed to produce good crops. Furthermore, but for their bravery and hard work the country could not have been developed.

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Give Peat Soils Required Potash

By Arthur O. Braeger

Wisconsin College of Agriculture, Madison, Wisconsin

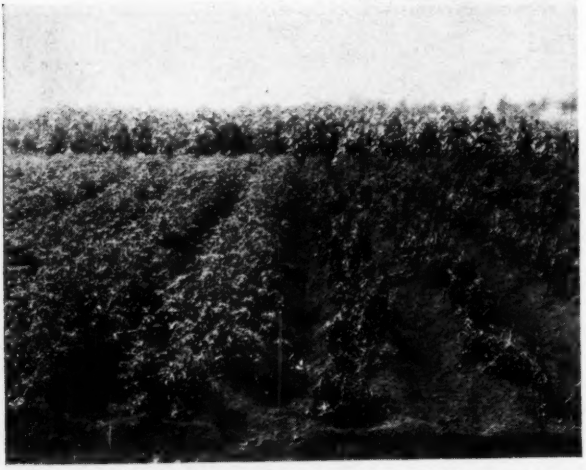
LACK of potash, not lack of water, limits crop yields on marsh soils, according to A. R. Albert, soils specialist at the University of Wisconsin. Detailed fertilizer trials conducted by Albert at the Coddington Sub-Station in Portage County during the past 14 years give proof of the need of potash on these peat soils.

Farmers located on drained marsh soils in central Wisconsin have taken great interest in the work-relief programs which have made possible the construction of gate dams in the large drainage ditches. These dams have unquestioned value as a means of preventing or controlling peat fires in dry seasons, but it is doubtful if they will increase the yields of crops on operating farms in anything like the degree numerous farmers hope for, declares Mr. Albert.

Many local people are counting on the dams to raise the water table of the soil during the dry periods, and thus supply plants with needed moisture. It must be recognized, however, that the limiting factor on these soils is almost invariably a lack of potassium rather than inadequate moisture, Mr. Albert points out.

Potash First Essential

"It is unfortunate," he explains, "that to the inexperienced or untrained observer, potash starvation gives many farm crops an appearance which resembles the effects caused by dry weather. No amount of water will bring potassium to these potash-hungry soils, and only disappointment will follow a program of expecting the new dams to make possible the desired increases in crop yields. Potash fertilization is the first essential for successful farming on these drained marsh soils, and there is no alternative for such fertilization."



Fertilized and unfertilized potatoes after a light frost in fall.

Mr. Albert tells about his tests with sunflowers at the Coddington Substation in the following: "With sunflowers, the yield

during the past 5 years has averaged 1,499 pounds of air-dry crop materials per acre on the unfertilized plats, whereas the yield has been doubled (3,031 pounds per acre) when 150 pounds of 50 per cent potash have been applied once every four years in the crop rotation. When an additional 150 pounds of potash fertilizer were added (thus making a total of 300 pounds every four years), there was another large increase, or a total yield of 4,733 pounds of air-dry crop material per acre.

Corn and soybeans grown in deep peat soil on the farm of James Isherwood, Portage County. Left: No fertilizer. Right: 100 lbs. muriate of potash per acre applied in rows.

"In this same rotation the potash applications have not only strikingly increased the yields of sunflowers, but the yields of oats have been increased from less than 2 bushels per acre on the check plats (which never received fertilizer of any kind) to 41.6 bushels per acre with the 150-pound application of potash, and 49.5 bushels per acre for the 300-pound application. The rotation is for four years, with the plats being in mixed timothy and clover for two years following the oats."

"Hay yields have increased. They have averaged 1,129 pounds on unfertilized plats, 2,308 pounds on the plats getting 150 pounds potash fertilizer during the four years, and 2,806 pounds where 300 pounds of potash fertilizer were used."

According to Mr. Albert, tests with phosphate fertilizers in addition to potash have revealed marked benefit from superphosphate applied for sunflowers, and some increases in yields of oats and hay. The superphosphate was added once during the 4-year rotation at a rate equivalent to 64 pounds of phosphoric acid per acre. Sunflower dry forage yields were thereby increased from 4,733 pounds per acre to 5,608 pounds. Rock phosphate has shown little benefit on oats or sunflowers, but it is somewhat more effective than superphosphate for hay crops. Phosphate fertilizers applied without potash have shown no benefit. Adding lime to the marsh soils on the Coddington Sub-station has had no effect on crop yields.

Conform to Rotation

Based on this experience of 14 years, Mr. Albert points out that the fertilizer plat experiment has now been modified to conform to the rotation which seems to be the best adapted to the deep peat soils in this area.

1. Sunflowers (Giant Russian) for silage, drilled in rows to a stand of 5 to 7 inches between plants.

2. Oats (Wis. No. 7) drilled at ½ to 1 bushel per acre in late May with a seeding of reed canary grass at 4 to 6 pounds per acre broadcast before the disks. The seed bed is prepared without plowing and all seedings rolled. In case of failure of reed canary grass seeding in oats, it is resown after oat harvest or/and again just before

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Alabama's "Garden Spot"

Baldwin County

By L. O. Brackeen

Editor, Agricultural Extension Service, Auburn, Alabama

IN LESS than 50 years Baldwin County, Ala., has grown into one of the leading "garden spots" of America, and indications are that the development has just begun. Truck crops and vegetables are produced by the acres, tons, and trainloads for consumption throughout the eastern half of the United States.

It was about 1890 that sawmills began to make serious inroads on the great pine forest of the county, and it was about 1900 when the real settlement began. Today most of that great forest is gone, and big fields of irish and sweet potatoes, green corn, beans, cucumbers, cabbage, radishes, turnips, peppers, early onions, asparagus, parsnips, and other truck and vegetable crops have taken its place. Too, there are fields of cotton, peanuts, soybeans, cowpeas, and velvet beans, as well as a few big orchards of Satsuma oranges, pears, and other fruits. Herds of beef and dairy cattle, hogs and sheep, and flocks of chickens also thrive in the county.

During this rapid development a most earnest, energetic, and thrifty population has been established. Among the citizens are native Americans, Swedes, Norwegians, Danes, Germans, Hungarians, Englishmen, Scots, Bohemians, Italians, and Greeks.

A Bright Future

Indications are that Baldwin County will make even greater progress during future years than it has in the past. There are at least seven reasons for this: (1) Farmers continue to settle in the county; (2) new land is being developed and improved; (3) farmers are learning to produce two to three crops per year on the land; (4) higher yields are being obtained by the use of the proper kind and amount of fertilizers and legumes; (5) better planting seed are being used; (6) more and better work stock are being used; (7) modern equipment is being put into operation.

Farmers find that crotalaria improves their land and increases truck-crop production.

Fields of fine truck crops, such as the cabbage field above, have supplanted the great pine forests of the county.

That the population is increasing and new farms are developing are indicated by the large number of farmers who move into the county from other parts of the state and nation and establish homes every year. Real estate agencies are very active. The possibilities of further developments are shown by the fact that only 8 per cent of the land is in cultivation, while 35 to 40 per cent of it is fertile and suitable for truck crops.

Successful Rotations

Much of the land produces two or three crops during the same year. The irish potato crop is planted in January and February in 3-foot rows. In April a row of corn is planted in every other potato middle, and then when the potatoes are harvested in May and June a row of velvet beans, cowpeas, or soybeans is planted in the middles not planted to corn. Hogs and cattle are turned into the fields to eat the beans and peas after the corn is harvested. Soybeans are often left to make seed for sale and for planting the following year.

Many small operators produce and harvest a crop of potatoes and then plant the land to corn interplanted with either velvet beans, cowpeas, or soybeans. Often two crops of potatoes are produced on the same land the same year. After an early crop of irish potatoes is harvested and marketed, a crop of late sweet potatoes is produced for consumption in the southern states. A crop of cucumbers followed by a crop of sweet potatoes is another method of growing two crops on the land in one year.

A large acreage of the land is planted in summer legumes each year. There are two big advantages to growing legumes; they improve the soil and furnish valuable grazing for the cattle and hogs in the fall.

During the past two or three years farmers have learned to grow crotalaria for improving their lands and increasing their truck crop production. That the crop offers unusual possibilities is shown by facts established at the Gulf Coast substation at Fairhope:

"Two and a half tons of crotalaria turned in 1932 gave an increase of 23 bushels of potatoes for 1933; 8 tons of crotalaria turned in 1933 gave 45 bushels increase in yield of

potatoes in 1934; and 13 tons turned in 1934 gave 78 bushels increase in yield of potatoes for 1935.

"Two and a half tons of crotalaria turned in 1932 gave only 5 bushels increase in yield of beans in 1933; 8 tons of crotalaria turned in 1933 gave an increase of 66 bushels of beans in 1934; and 13 tons of crotalaria turned in 1934 gave an increase in yield of 103 bushels of beans in 1935."

Farmers have made rapid progress in finding out what are the most profitable fertilizers to use under various truck crops. To assist them in this work the Gulf Coast Experiment Station was established at Fairhope in 1930 and has made some interesting developments since that time.

For years it has been the established practice for farmers to fertilize their irish potatoes with 4-10-7 and to side-dress with about 200 pounds of nitrate of soda per acre. The experiment station has found that the most profitable fertilizer for irish potatoes is about 1,500 pounds of 4-10-6 or 4-10-7. "The average production following an application of 1,500 pounds of the fertilizer was 150 bushels per acre," says Professor L. M. Ware, head of the horticulture and forestry department of the State Experiment Station. "Figuring potatoes at $1 per bushel, the returns were $110.44 above cost of fertilizer and seed."

"It appears that 600 to 800 pounds per acre of a 4-10-7 fertilizer are best for the early sweet potato crop in south Alabama," according to Professor Ware. "For the late crop, about 300 to 400 pounds of 4-10-7 fertilizer should produce a very satisfactory yield." For years Baldwin County farmers have been applying 1,000 to 1,400 pounds of 4-10-7 per acre.

For Best Returns

Despite the fact that the Alabama Experiment Station recommends only nitrogen for field corn throughout the state, experiments at the Gulf Coast station show that green corn responds nicely to phosphorus and potash. In fact, the results indicate that the most profitable returns from corn in the Gulf area are made when about 800 pounds of 8-10-6 or 1,000 pounds of

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Careful grading of sweet potatoes help to move a crop on selective markets.

The Drought and Its Effects on Corn Prices

By E. N. Bressman and L. H. Bean
United States Department of Agriculture

"PRICE" is a magic word. Regardless of other factors, such as quantities produced and purchasing power, most growers emphasize prices to the exclusion of all other factors. When corn is 10 cents a bushel they know that conditions are bad; when corn is a dollar a bushel it is claimed that conditions are good, regardless of what the net returns may be. Doubtless, the size of the corn crop is the most important factor in determining its price.

Naturally, everyone desires to know what corn production will be in 1937 in this country. No one knows for certain what the 1937 production, and hence the price, will be, but we are in an unusual situation that allows one to make an unusual forecast.

The difficult time to make a prediction is when things are running along on an even keel. The 1937 price of corn will come in a cycle of great price fluctuations. It is in these great fluctuations that one can with some assurance predict what might happen. A look at the record reveals that there have been only two other situations in the history of corn production and corn prices during the past 40 years like that of 1936. An examination of those situations is very suggestive as to what is likely to transpire in the way of production and price for 1937.

Ordinarily, the variations in corn production from year to year do not exceed 500,000,000 bushels; but in 1901 the corn crop was nearly 1,000,000,000 bushels less than the crop of 1900; and in 1934 the corn crop was again approximately 1,000,000,000 bushels less than in 1933. The 1936 crop reduction was approximately 800,000,000 bushels.

It would probably be a very safe guess that the 1937 crop will not be as low as that of 1936, and while there can be no assurance that 1937 will not be a drought year, the experience after the 1901 and 1934 crop failures would tend to support a forecast of a considerably increased production for 1937. The increase in the 1902 corn crop over the small crop of 1901 was nearly 1,100,000,000 bushels, more than offsetting the decline of the previous year. The increase in the 1935 crop over that of the small crop of 1934 was nearly 900,000,000 bushels, not quite making up for the reduction of the previous year.

1937 Crop Forecast

These two upsets, the only ones in 40 years with which the 1936 situation may be compared, suggest the possibility of a corn crop in 1937 approximately as large as that in 1935 or 1933.

If the 1937 corn crop should turn out to be approximately 1,000,000,000 bushels greater than that of 1936, what is likely to be the course of prices during 1937? On this question, too, the experience of 1901 and 1902 and 1934-35-36 are informative. Ordinarily, the price of corn is affected by

a number of factors, but when the supply of corn changes as abruptly as it did on these particular occasions, the variation in supply becomes the predominant factor in the course of prices, and we tend to get a fairly typical price behavior that corn producers may find of use in making their plans for 1937.

Corn Prices

Let us examine first what happens to the course of corn prices during the year when the crop is abnormally reduced as it was in 1901 and 1934. In January, 1901, the price of corn was, of course, dominated by the size of the crop produced in 1900 and then being marketed. The crop that affected the January, 1901, prices was approximately 2,650,000,000 bushels. That good-sized crop kept the price of No. 3 yellow corn at Chicago—adjusted to the present level of commodity prices—at 52-54c per bushel in January and February, 1901. The seasonal rise in corn prices raised them to slightly over 60 cents in April, May, and June. Then came the drought of 1901, and the price of corn rose to an 80-cent level by August and remained there during August, September, and October, and eventually reached close to 90 cents in December, 1901. From December, 1901, to July, 1902, the price of corn hovered around the 85-cent level.

Now take the history of corn prices as it developed during the 1934 drought. In January, 1934, the price of corn was dominated by a corn crop produced in 1933 which amounted to 2,350,000,000 bushels. The price of No. 3 yellow corn during the months of January to May, 1934, inclusive, hovered around a level of 53 cents. Then came the drought of 1934 and by August of that year the price of corn at Chicago reached the 80-cent level, remained there during August, September, and October. By December it reached an average for the month of 97 cents, and from that point on, declined to an 86-cent level during the months of March through July, 1935.

In the 1901 and 1934 situations, similar to that of 1936, we had a price rise, produced largely by unusual drought conditions, of approximately 70 per cent between January and December of the drought year. What has been the experience so far in 1936? This year, the price of No. 3 yellow corn at Chicago averaged approximately 60-65 cents during the months of January to May. The drought lifted these prices to an average of $1.10 during the months of August and September. So far this year, then, the price of corn has risen a little over 80 per cent above the price which prevailed at the beginning of this year. This is not far out of line with the experience of the other 2 drought years. At present, current prices are relatively higher than in those other two situations.

Corn Markets

What did the corn markets do under the similar conditions of 1935 and 1902 when the corn crops recovered from the previous year's drought, and will the 1937 experience be similar to that of 1935 and 1902?

The small crop of 1901 established corn prices during the months of January to July, 1902, at approximately a level of 85 cents. The prospect of a good crop for 1902 brought about a gradual decline in corn prices from an average of 87 cents in January to an average of 55 cents in the following January, and prices remained at that level during the months of January to April, 1903. In other words, the impact of a large increase in production following a small crop amounted to a reduction of 32 cents per bushel, or roughly 35 per cent.

During the early months of 1935, the small crop of 1934 kept corn prices at a level of approximately 87 cents during the first half of 1935.

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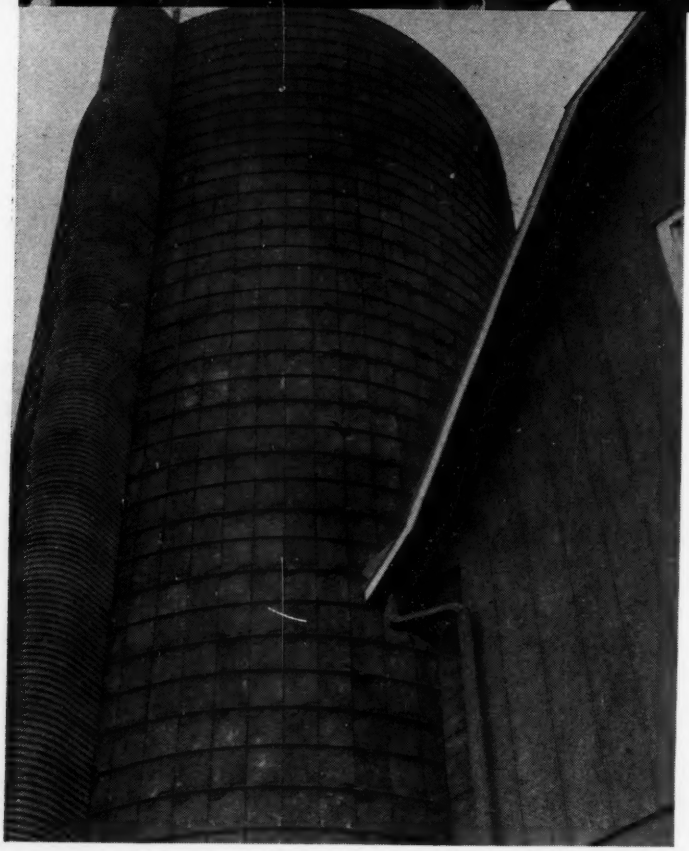
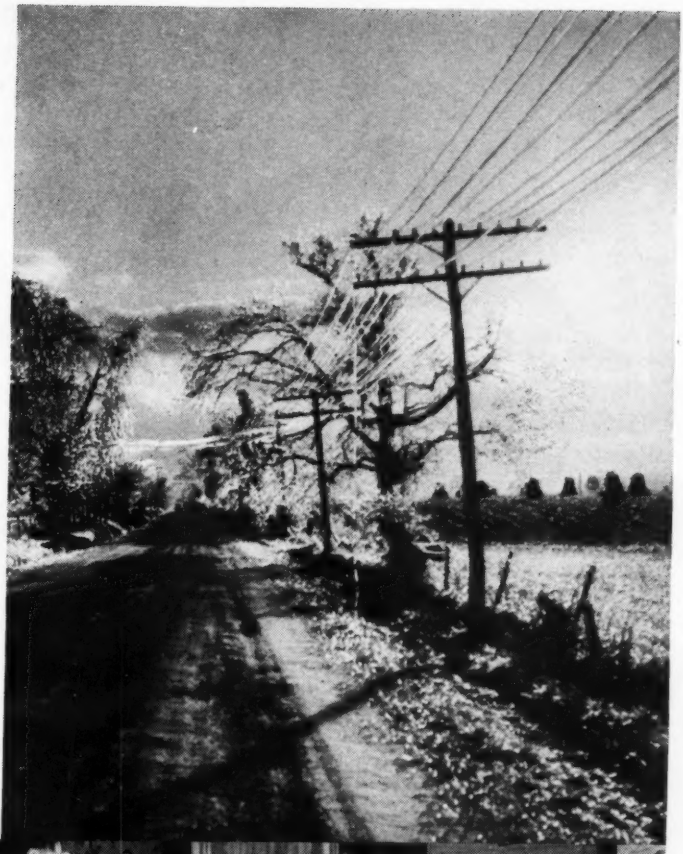
PICTORIAL

A STRAGGLER WENDS HIS WAY SOUTHWARD.

Above: Time out to think up a tall story on what got away.

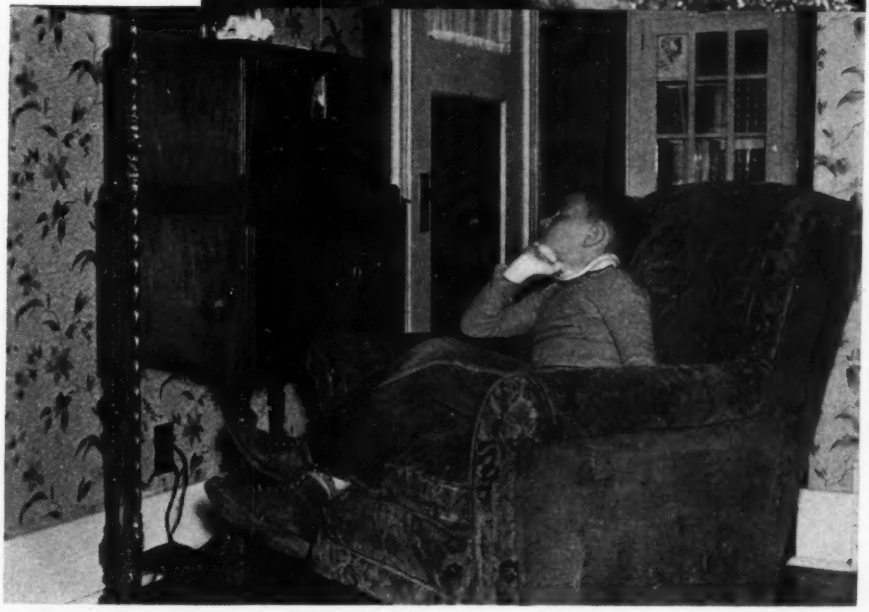


Left: The silo stands —a fitting monument to the year's hard labor.

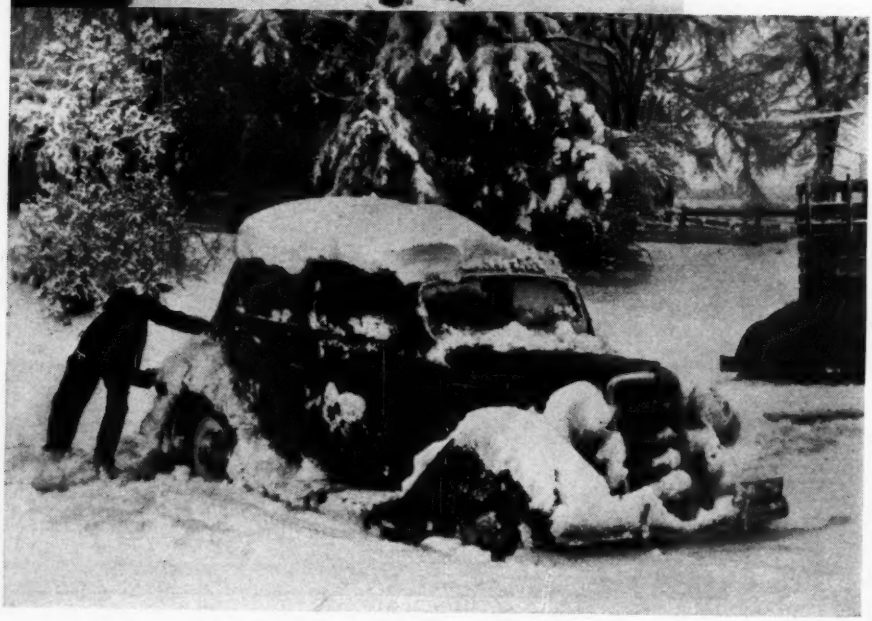


Right: In crystal, commonplace landscapes become picturesque.

Below: Too tired to wait until the lone cowboy made the rescue.



Unexpected snows make trouble in more ways than one.



The Editors Talk

Looking Forward

We are going into the new year in a very favorable economic position. Business is showing a much higher level of activity and a greater degree of economic balance, with the laboring class earning a higher rate of pay and more people working. At the same time our farm population is holding more money in its pockets than it has for a number of years.

Recovery, to be lasting, must be characterized by a fine degree of balance between industries. The tendency toward this balanced condition is a good indication of the return to a normal period and stability, with the likelihood that it will extend over the next four or five years.

The increase in agricultural production that would seem logically to follow within the year, must be accompanied by a relatively high level of consumer purchasing power, in order to maintain its present favorable position. Statistics show that employment has increased about 8.5 per cent and payrolls approximately 13 per cent in the past year. Not losing sight of the existence of the unemployment problem and the gaps yet to be bridged, conditions of wage earners, greatest consumers of farm products, are better than a year ago.

Interdependence is the basis of our economic system. With cash in his pocket the farmer will make a number of purchases that he has neglected for the last few years. These purchases are as important to the industry from which he buys as they are to him, for he is creating a market for industrial centers. The $7,800,000,000 he will receive from marketing this year will have its effect on increasing his markets next year. While farm production will undoubtedly increase in 1937, it is not expected to increase to the extent of upsetting the present favorable balance.

The 2-billion-bale reduction in the world supply of American cotton this year will give American cotton producers a decided advantage. They can increase their crop within limits, without a depressing influence on prices. The production of truck crops will probably be greater than in 1936, the record year, but with no signs of a let-up in demand, prices should be high enough to allow for a profit. Reduced supplies of late cabbage, Irish potatoes, and sweet potatoes will maintain these products at high levels through the winter, with the situation for spring vegetables promising improvement.

A continued improvement in the tobacco market seems in prospect, with types other than flue-cured showing the greatest strength. The increase in cigaret consumption will probably continue through 1937.

On the basis of present acreages, figuring normal yields, the 1937 wheat crop will be considerably in excess of domestic requirements. Wheat prices will very likely decline toward export levels for next season's crop. As a result of drouth and reduced feed supplies, the meat supply should be the lowest in years. This favorable position will tend to place livestock producers in a relatively better position than the cash grain farmers. The reduction in meat

supplies will be due mostly to a very light cattle slaughter in 1937. Hog marketings will be from 10 to 15 per cent greater than in the two previous seasons. The number of lambs for feed this season will be greater than last year. Due to the shortage in beef, pork, and lamb, prices will hold steady.

Higher wages and cost of commodities used in production would tend to increase the cost of agricultural production in 1937. At the same time, farm values will continue to increase, and interest rates may rise from the present low levels. There will be no marked increase in machinery prices, and, although the prices for fertilizer will probably be slightly higher, the present favorable outlook for agricultural products will encourage the increase in consumption of commercial fertilizer.

Therefore, agriculture is closing 1936 and looking ahead to 1937 with more optimism than has been warranted in years. Let us add our hope that all may enjoy a happy and prosperous New Year.

Merry Christmas

The Christmas Spirit, now upon us, is as universal as it is personal. It may vary in degree with age and circumstance, but few can fail to react to the general good will and tradition of the season. Although some of these traditions are supposedly lost between the age of 7 or 8, they are fostered in maturer judgments, not only for the sake of the young, but as a symbol of the joy which comes in forgetting self by remembering loved ones and the less fortunate.

Daniel Webster once said, "If we work upon marble, it will perish. If we work upon brass, time will efface it. If we rear temples, they will crumble into dust. If we work upon immortal minds, if we imbue them with principles . . . we engrave on these tablets something which will brighten for eternity." Thus the Christmas celebration, teaching the principle of love and fellowship, rolls round each year, brighter and more colorful because of its eclectic personality. Each age, each generation has lent something of itself to perpetuate a beautiful idea. A pagan festival gave it ritual, Germany gave it the Christmas tree, Holland gave it Santa Claus, Belgium and France gave it the Christmas stocking, England gave it the "Merry Christmas" greeting, and Christianity gave it meaning. What will you give it?

In our country nothing will ever take the place of "'Twas the Night Before Christmas," Dickens' "Christmas Carol," and the hymns, "Joy to the World," "O, Little Town of Bethlehem," "Silent Night." We hear them sung by full choirs, by solo voices, by the faltering, thin treble of children, but we grope for the spirit behind the song and listen uncritically. This is the inheritance of a people.

There are other traditions which are the private possessions of each family, for Christmas is after all a day which belongs irretrievably to the family. To one group it will mean a Yule log and festive board for the reunion, to another a decorated fir tree and entertainment for friends and neighbors, to still another it means finding faith renewed by the unselfish generosity of others.

But it is within the individual that the ideal of Christmas must live. Customs and traditions are but the outward manifestation of "Peace on Earth, Good Will Toward Men." To be passively receptive of the bounty and good cheer is to miss the point. Speed the age-old tradition on its way, fuller and richer because of your joyous participation in it.

REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Fertilizers, Soils, Crops, and Economics. A file of this department of BETTER CROPS WITH PLANT FOOD would provide a complete index covering all publications from these sources on the particular subjects named.

Fertilizers

A thoroughly practical plan for fertilizing grapes is outlined by F. E. Gladwin in New York State Agricultural Experiment Station Bulletin 671, entitled, "A Twenty-five Year Test of Commercial Fertilizers for Grapes." This station in 1909 began testing the three principal fertilizer ingredients, nitrogen, phosphorus, and potassium, to determine their relationships to Concord grape production on soils typical of about one-third of the Chautauqua and Lake Erie Grape Belt. A study of the results will also aid grape growers whose vineyards are located on different soil types.

All combinations of nitrogen, phosphoric acid, and potash have been highly profitable for the 25-year period, although the real gains have come from the nitrogen and potash, whatever the combination. The data suggest that at least 250 pounds of nitrate of soda can be applied profitably. It seems desirable to apply potash in the form of concentrated salts such as muriate or sulphate of potash, since similar quantities of actual potash in the form of kainit would be costlier. Muriate or sulphate of potash was applied at the rate of 200 pounds per acre, but the author states that possibly larger applications of potash would give increasingly better returns. Phosphoric acid has appeared of doubtful value, although it has greatly improved the growth of green manure crops in this vineyard. A certain amount of superphosphate applied at intervals of three or four years is advised. Nitrogen, phosphorus, and potassium or nitrogen and potassium were more effective than stable manure and stable manure with lime. Lime exerted a favorable effect on the growth of legumes used as green manures but apparently depressed the yield of both fruit and wood. Vineyards must be well drained and weeds must be controlled during the active growing season.

"Fertilization of Alfalfa on Alkaline Calcareous Soils," Agr. Exp. Sta., Tucson, Ariz., Bul. 154, Oct. 15, 1936, W. T. McGeorge and J. F. Breazeale.

"A Manganese Deficiency Affecting Beans," Agr. Exp. Sta., Gainesville, Fla., Bul. 300, Aug. 1936, G. R. Townsend and H. H. Wedgworth.

"Recommendations Made by the Louisiana Agricultural Experiment Station for the Fertilization of Field and Truck Crops in Louisiana, 1936-37," Agr. Exp. Sta., Baton Rouge, La.

"Artificial Manure Production on the Farm," Agr. Exp. Sta., Columbia, Mo., Bul. 369, Sept. 1936, W. A. Albrecht.

"Some Effects of Long-continued Manure, Fertilizer, and Lime Treatment on the Composition of Cropped Soils," Agr. Exp. Sta., New Brunswick, N. J., Bul. 604, June 1936, A. W. Blair and A. L. Prince.

"Minor Elements in Land Fertilization," Agr. Ext. Serv., N. J. Agr. Exp. Sta., New Brunswick, N. J., Ext. Bul. 173, Mar. 1936, Jacob G. Lipman.

"Phosphate for Alfalfa," Agr. Exp. Sta., State College, N. Mex., Bul. 239, Apr. 1936, H. N. Watenpaugh and Glen Staten."

"Machine Placement of Fertilizers for Snap Beans in Florida," U. S. D. A., Washington, D. C., Cir. 399, July 1936, G. A. Cumings, A. L. Sharp, J. J. Skinner, G. M. Bahrt, and G. H. Serviss.

Soils

R. H. Bray in Publication AG-356, Illinois Agricultural Experiment Sta-

tion, "Potassium Availability in Illinois Soils," describes the practical interpretations of the total potassium content in the surface of the medium to poorly drained soils in the different areas of that state. A Potassium Content Map accompanies the publication and shows the potential available potash supply in soils by areas. The total potassium content of the soil is a valuable aid in determining its probable continued richness in available potassium. However, other facts in addition to the total potassium present must be known to predict safely the rate of supply of available potassium from the amount of total potassium, Professor Bray asserts. These facts have to do with parent potash minerals in the soils of the respective areas, the degree of weathering of the potash minerals, the relative rates of weathering of the potash minerals, the amounts of potash minerals in the soil colloidal material, the chemical nature of available potassium, and the amounts necessary for best crop results, the influence of the amounts of the other replaceable cations, and the amount of available potassium in each soil area.

It is suggested that soil tests should generally be made for soils in most areas, especially for those soils which do not produce satisfactory crop yields. It is also recommended that the status of the soil in regard to acidity and available phosphorus be determined before applying potash to any soil in any area.

"Hairy Vetch and Austrian Winter Peas for Soil Improvement," Agr. Exp. Sta., Auburn, Ala., Cir. 74, Aug. 1936, M. J. Funchess, Director.

"Terraces to Save the Soil," Agr. Exp. Sta., Urbana, Ill., Cir. 459, Aug. 1936, E. W. Lehmann and R. C. Hay.

"Clinton County Soils," Agr. Exp. Sta., Urbana, Ill., Soil Rep. 57, July 1936, E. A. Norton, R. S. Smith, and L. H. Smith.

"Chemical Analyses of Iowa Soils for Phosphorus, Nitrogen and Carbon: a Statistical Study," Agr. Exp. Sta., Ames, Iowa, Res. Bul. 203, R. H. Walker and P. E. Brown.

"Soil Survey of Mobile County, Alabama," U. S. D. A., Washington, D. C., Series 1930, No. 42, B. H. Williams, G. A. Swenson, M. J. Edwards, A. L. Gray, J. F. Stroud, M. E. Stephens, Malcolm Croft, L. G. Brackeen, and M. E. Swann.

"Soil Survey of the Alturas Area, California," U. S. D. A., Washington, D. C., Series 1931, No. 23, E. J. Carpenter and R. Earl Storie.

"Soil Survey of Fayette County, Kentucky," U. S. D. A., Washington, D. C., Series 1931, No. 25, Howard Wm. Higbee and K. S. Venable.

"Soil Survey of Lee County, North Carolina," U. S. D. A., Washington, D. C., Series 1933, No. 1, S. O. Perkins and E. F. Goldston.

Crops

Of much interest to agricultural workers are two new publications on pasture fertilization and management. These are Louisiana Extension Circular 156 entitled "Louisiana Pastures" by R. A. Wasson, and Maine Extension Service Bulletin 223 entitled "Improving Maine Pastures" by Richard F. Talbot. In spite of the fact that these publications deal with widely different types of soils, climatic conditions, and types of herbage, it is significant that the fundamentals are recognized as being similar.

An important consideration, whether in the southern or northern area, is that the best combination of native grasses and legumes suitable to local conditions be used. Regardless of the differences in vegetative growth, the fertilizer requirements for the best growth are supplies of the essential nutrients at the right time and in the right place. Complete fertilizer together with lime if the soil is acid, best meets these requirements.

Among the important recommendations under Louisiana conditions is that 10 pounds Dallas grass, 5 pounds Carpet grass, and 5 pounds Hop clover per acre be included in the mixture and planted during the latter part of September or October. From 15 to 20 pounds of lespedeza planted about the 20th of February is also suggested. Soon after the lespedeza is

planted, a broadcast application of about 300 pounds of a 4-12-4 fertilizer per acre is recommended. To sod the pasture with Bermuda grass is best accomplished by dropping the cuttings of Bermuda in small furrows at three-foot intervals, covering them with dirt and packing with hoe or foot. The pasture must be kept clean of weeds, logs, stumps, and the like.

A good permanent pasture in Maine should consist of the better native grasses and some clover. The fertilizer application for the first year should be from 500 to 800 pounds of 5-8-7 or ½ these amounts of double strength fertilizer (8-16-14 or 8-16-16) per acre. If considerable clover appears the second year apply 500 pounds of 5-8-7 (or similar analysis). For the third year if 75% or more of the sod is clover apply 300 to 400 pounds of an 0-10-10 per acre. If clover does not come in, it is suggested that applications of a nitrogen fertilizer should be used for the second and third years.

Many other valuable suggestions are offered in these two interesting publications.

"The Physiology and Control of Pecan Nut Filling and Maturity," Agr. Exp. Sta., Tucson, Ariz., Tech. Bul. 62, June 1936, A. H. Finch and C. W. Van Horn.

"Length-diameter Relationships in Cotton Fiber" Agr. Exp. Sta., Fayetteville, Ark., Bul. 327, June 1936, O. A. Pope.

"Non-saccharine Sorghums," Agr. Exp. Sta., Fayetteville, Ark., Bul. 328, June 1936, C. K. McClelland.

"Pyrethrum Plant Investigations in Colorado," Agr. Exp. Sta., Fort Collins, Colo., Bul. 428, July 1936, C. B. Gnadinger, L. E. Evans, and C. S. Corl.

"Poisonous and Injurious Plants of Colorado," Agr. Exp. Sta., Fort Collins, Colo., Bul. 429, July 1936, L. W. Durrell and I. E. Newsom.

"Oat Production in Colorado, 1928-1935," Agr. Exp. Sta., Fort Collins, Colo., Bul. 430, July 1936, D. W. Robertson, Dwight Koonce, J. J. Curtis, and J. F. Brandon.

"Tobacco Substation at Windsor, Report for 1935," Agr. Exp. Sta., New Haven, Conn., Bul. 386, July 1936, P. J. Anderson, T. R. Swanback, and O. E. Street.

"Effects of Summer Cover Crops on Crop Yields and on the Soil," Agr. Exp. Sta., Gainesville, Fla., Bul. 301, Sept. 1936, W. E. Stokes, R. M. Barnette, and J. B. Hester.

"Crop Yields from Illinois Soil Experiment Fields, Including the Crop Season 1935," Agr. Exp. Sta., Urbana, Ill., Bul. 425, July 1936, F. C. Bauer, A. L. Lang, C. J. Badger, L. B. Miller, C. N. Farnham, and P. E. Johnson.

"The Soybean—A Plant Immigrant Makes Good," Agr. Exp. Sta., Urbana, Ill., Cir. 461, Sept. 1936, W. L. Burlison.

"Plums and Cherries," Agr. Exp. Sta., Lafayette, Ind., Bul. 212 (Rev.), Mar. 1936.

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"Tobacco Diseases," Agr. Exp. Sta., Lexington, Ky., Bul. 362 (328 Rev.), Mar. 1936, W. D. Vallean and E. M. Johnson.

"Soybeans," Agr. Ext. Serv., Baton Rouge, La., Ext. Cir. 157, July 1936.

"Lespedeza," Agr. Ext. Serv., Baton Rouge, La., Ext. Cir. 158, July 1936, R. A. Wasson.

"Corn Growing for 4-H Club Members," Agr. Ext. Serv., Baton Rouge, La., Ext. Cir. 161, Mar. 1936, R. A. Wasson and B. W. Baker.

"Sugar Cane Variety Report for Season of 1935," Agr. Exp. Sta., Baton Rouge, La., Bul. 274, June 1936, C. B. Gouaux and E. C. Simon.

"Twenty-first Annual Report for the Year 1935," Agr. Ext. Serv., College Park, Md., T. B. Symons, Director.

"Peach Growing in Massachusetts," Agr. Ext. Serv., Amherst, Mass., Ext. Leaf. 146, Rev. Apr. 1936, John S. Bailey.

"The Field Station Journal," Agr. Ext. Serv., Amherst, Mass., No. 152, July 1936, and No. 153, Sept. 1936.

"Soybeans for Minnesota," Agr. Ext. Serv., Universty Farm, St. Paul, Minn., Sp. Bul. 134 (Rev. May 1936), A. C. Arny, R. F. Crim, and R. E. Hodgson.

"Growing Fall Gardens," Agr. Ext. Serv., Columbia, Mo., Cir. 349, Aug. 1936, R. A. Schroeder and T. J. Talbert.

"Soybeans in Nebraska," Agr. Ext. Serv., Lincoln, Nebr., Ext. Cir. 142, 1936, P. H. Stewart and D. L. Gross.

"Annual Report of the Board of Control for the Fiscal Year Ending June 30, 1935," Univ. of Nev., Reno, Nev.

"Questions and Answers Relative to Tomato Production," Agr. Ext. Serv., New Brunswick, N. J., Ext. Bul. 174, Mar. 1936.

"Crop Production in Northeastern New Mexico Under Severe Soil-blowing Conditions," Agr. Exp. Sta., State College, N. M., Bul. 243, June 1936, John Carter, Jr.

"The Planting Value of Wheat Taken Di-

rectly from Farmers' Drills," Agr. Exp. Sta., Geneva, N. Y., Bul. 677, Aug. 1936, Willard F. Crosier.

"Annual Report of Agricultural Extension Work in North Carolina for 1935," Agr. Ext. Serv., State College Station, Raleigh, N. C., I. O. Schaub, Director.

"Crop Adjustment, Oklahoma's Opportunity for Soil Improvement," Agr. Ext. Serv., Stillwater, Okla., Cir. 307, Reprint, 1935, Gen. Series 82, L. W. Osborn.

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"Foreign Agricultural Extension Activities," U.S.D.A., Washington, D. C., Ext. Serv. Cir. 243, June 1936.

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Economics

In publication entitled, "Farm Buying and Industrial Recovery," the Agricultural Adjustment Administration has reported the results of a survey made to determine the effect of increased farm income upon the industrial centers of the United States. The information presented in the bulletin was developed through a study of more than a half million freight waybills and waybill abstracts in the freight auditors' offices of 16 railroads which handle approximately 75% of the traffic in manufactured commodities delivered to the agricultural regions.

There was a 58% increase in cash farm income in 1935 as compared to 1932. The extent to which this increase was coupled with an increase in shipments of manufactured commodities into the states where agriculture plays an important role in maintaining purchasing power provides a clue to the part larger farm purchasing power has played in maintaining the operation of mills and factories in the industrial regions.

The commodities studied were divided into four main groups according to the type and nature of their use. 1. Agricultural commodities used principally in farm production. 2. Domestic and personal commodities used principally in homes whether urban or rural. 3. Industrial and commercial commodities used principally in industrial and commercial activities. 4. General commodities used generally on farms, in homes, and in industry. The study began July 1, 1932, and ended June 30, 1935. The territory east of the Mississippi River and north of the Ohio and Potomac Rivers, comprising 16 states, was taken as the area of origin of the industrial shipments. About 75% of the manufacturing of the country is carried on in this area. The territory west of the Mississippi River and south of the Ohio and Potomac Rivers, comprising 32 states was taken as the area of destination of the industrial shipments. Approximately 70% of the agricultural cash income in the United States is received in this area.

Manufactured commodities shipped from the 16 industrial states increased 60.1% in the year ending June 30, 1935, as compared to the year ending June 30, 1933. Shipments in the agricultural group showed an increase of 165.2%. In this group, agricultural implements and machinery registered the greatest increase, 309.3%. The domestic and personal group increased 98.7%. Sewing machines and refrigerators led this group with an in-

crease of 1,340.3% and 259.6% respectively. By far the largest group insofar as diversity and weight are concerned was the industrial and commercial group. Shipments of these goods showed an increase of 57.2% in year 3. The heaviest commodities in this group were steel and iron products which showed an increase of 86.7%.

Of special interest is the increase registered by the building and construction section in this group. Lumber and lumber products increased 32.9% and 53.1% respectively in years 2 and 3. Brick increased 25% and 34.7%, asphalt 2.2% and 29.8%. Shingles on the other hand decreased in both years showing a 35.5% decrease in year 2 and a 52.5% decrease in year 3. However, asbestos products, including asbestos shingles, increased 29.8% and 91.5% respectively in the same years.

Shipments of all commodities in the general group increased 31.3% and 51% in years 2 and 3 respectively when compared to the year 1. Automobiles showed a gain of 138.6% and 219.9% respectively.

We have often heard of the interdependence of one industrial group upon the other in our more or less complicated economic organization and the results of this study indicate statistically the truth of this theory. It is interesting to note that increases in agricultural income are almost immediately followed by increases in purchases by farmers of the products produced in the manufacturing centers of the country. In most instances, the increased purchases were greater than the actual increases in the farm income. Thus we see how essential it is that all groups participate in the improved conditions before we can expect any general revival in industry and trade.

According to a mimeographed report published by the North Carolina Department of Agriculture, Raleigh, N. C., "Fertilizers Sold in North Carolina From January 1, 1936, to July 1, 1936," total fertilizer sales for the first 6 months of 1936 amounted to 973,347 tons. Included in this total are 768,621 tons of mixed fertilizers, 199,407 tons of material, and 5,319 tons of customers mixtures. The most important grade sold during the period, based on tonnage, is 3-8-3 which constituted 336,440 tons of the total. The next most important grade was 3-8-5 which represented 165,375 tons of the total. Apparently 3-8-3 is losing in popularity as compared to the other grades, due to the fact that the rate of increase as compared to the first 6 months of 1935 is not as great as for other fertilizers. The rate of increase for all fertilizers was 21.3%, while the rate of increase for 3-8-3 was only 9.7%.

According to the "County Fertilizer Data: Mixed Goods and Materials," report of the State Department of Agriculture of Mississippi, 219,250 tons of fertilizer were sold in that state during the year ending June 30, 1936. This total consisted of 107,200 tons of mixed goods, 82,267 tons of nitrogenous materials, 25,056 tons of phosphate materials, and 4,726 tons of potash materials. By far the most important mixture was 4-8-4 which accounted for 94,708 tons of the total of mixed goods sales. The most important nitrogenous material was nitrate of soda which accounted for 45,025 tons total for that group. Sulphate of ammonia was second with 19,246 tons. The most important phosphate material was 18% superphosphate which accounted for 22,003 tons of the total. Muriate of potash was the most important potash material both from the standpoint of tonnage and from the standpoint of total K_2O, accounting for 2,551 tons of the total for that group of materials.

The Oklahoma Agricultural and Mechanical College reports that Oklahoma farmers used 3,944 tons of fer-

tilizer in the 1935-36 season. The most popular grade in that state is 4-8-6 which accounted for 55.3% of the total. More than 60% of the fertilizer consumed in the state is sold in the following seven counties: Leflore, McCurtain, Muskogee, Oklahoma, Ottawa, Pittsburg, and Tulsa.

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"Report of Analysis of Commercial Fertilizers," Dept. of Agr. and Immigration, Baton Rouge, La., Fert. Rep., Season 1934-35, Harry D. Wilson, Commissioner.

"Maine Agriculture in 1935: A Statistical Presentation," Agr. Exp. Sta., Orono, Me., Bul. 382, June 1936, Charles H. Merchant.

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"Economics of the Production and Marketing of Apples in New Mexico," Agr. Exp. Sta., State College, N. M., Bul. 242, June 1936, P. W. Cockerill and R. P. Callaway.

"Prices of Farm Products in New York State, 1841 to 1935," Cornell Univ. Agr. Exp. Sta., Ithaca, N. Y., Bul. 643, Mar. 1936, S. E. Ronk.

"An Economic Study of Part-Time Farming in the Elmira and Albany Areas of New York, 1932 and 1933," Cornell Univ. Agr. Exp. Sta., Ithaca, N. Y., Bul. 647, Apr. 1936, Kenneth Hood.

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"Analyses of Miscellaneous Materials," Agr. Exp. Sta., Geneva, N. Y., Cir. 165, July 1, 1936, A. W. Clark.

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"A Study of the Organization and Management of Farms in Grayson County, Virginia," Agr. Exp. Sta., Blacksburg, Va., Bul. 304, June 1936, J. J. Vernon, T. M. Dean, and H. W. Hawthorne.

"Rural Population Trends in Washington," Agr. Exp. Sta., Pullman, Wash., Bul. 333, July 1936, Paul H. Landis.

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"Trends and Desirable Adjustments in Washington Agriculture," Agr. Exp. Sta., Pullman, Wash., Bul. 335, July 1936, A. E. Orr, C. P. Heisig, J. C. Knott, and C. L. Vincent.

"Tons of Fertilizer by Grades Shipped Into West Virginia—1935," State Dept. of Agr., Charleston, W. Va., J. B. McLaughlin, Commissioner.

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"Wheat Requirements in Europe," U. S. D. A., Washington, D. C., Tech. Bul. 535, Sept. 1936, J. H. Shollenberger.

"Unshackling Our Export Trade," U. S. D. A., Washington, D. C., G-57, July 1936, Chester C. Davis.

Erratum: Under the Crops section of our August-September issue, a sentence in the abstract of Bulletin 208 of the Connecticut Agricultural Experiment Station read as follows: "Land in southern New England is too steep for tillage purposes and hence pastures should be permanent." This should have read: "In southern New England, there is an over-abundance of land too steep, too rough, or both, to justify tillage operations. Therefore, in most cases permanent pastures should be located on such areas."

Soybeans Remove Soil Power

AN ANNUAL application of from 500 to 1,000 pounds of 5-5-10 fertilizer per acre on land on which soybeans are grown each year is necessary if yields are to be maintained.

This fact, determined after 24 years of research at the University of Delaware Experimental Farm at Newark, Del., was stated before soils and crop experts attending the recent meeting of the American Society of Agronomy at Washington, D. C., by G. L. Schuster, professor of agronomy at the University of Delaware.

"Twenty-four years of investigational work at the University Experimental Farm have demonstrated that an application of 100 pounds of nitrate of soda, 250 pounds of superphosphate, and 75 pounds of muriate of potash per acre per crop is not sufficient to maintain the original crop yielding power of the soil," Schuster told the assembled agronomists.

He pointed out that the yield of soybeans at the end of the 24-year-test period from the plots treated with that fertilizer mixture was only two more bushels per acre than the yield from untreated plots at the beginning of the test.

Calculations made at the University of Delaware on the basis of plant food removed from the soil by a soybean crop averaging 30 bushels per acre indicated that an application of from 500 to 1,000 pounds of 5-5-10 fertilizer would be necessary to maintain the production power of the soil.

"Love Apple" First in Canning

ONCE called the "love apple," and grown mainly as an ornamental plant, the tomato now ranks first in the United States as a vegetable canning crop. As a vegetable crop it is led only by potatoes and sweet-potatoes.

When introduced into the United States from the American tropics about 1800, the tomato was thought to be poisonous because it is related to the nightshade plant. Other non-poisonous members of the nightshade family are the eggplant, potato, and peppers.

About the middle of the last century canned tomatoes became an article of trade. The value of the annual crop is now estimated at more than $50,000,000, of which approximately $20,000,000 is spent for tomatoes by canners and manufacturers. Besides being canned, tomatoes are manufactured into soups, purees, catsups, and tomato juice. From 1,000,000 to 1,250,000 tons are grown annually for commercial purposes.

The industry is widely scattered over the United States, but Maryland, New Jersey, Virginia, Indiana, and California produce a large part of the crop for canners and manufacturers.

The tomato, like the potato, is the poor man's friend. It is not difficult to grow, it is not expensive, and can be served the year around, either fresh or canned. The ornamental "love apple" has become a utility vegetable, equally at home in a soup, a stew, a salad, in a dressing, or as that "home-grown" delicacy, tomato preserves.

Winter Strawberries And Where They Grow

STRAWBERRIES which appear in winter shortcakes probably originated in Florida. The first car-lot shipment of strawberries from west central Florida start on its way about the middle of December. Early berries from west central Florida continue to a peak in March, stopping entirely in April, says the Bureau of Agricultural Economics, which receives daily reports of strawberry shipments by rail, boat, and truck.

Texas usually ships about a carload in December and one in January. Louisiana in 1935 began in March with a mere 18 car lots, jumped to 1,399 car lots in April and back to 406 in May. Mississippi and Alabama, too, ship early strawberries.

North Carolina, with 2,399 car lots in 1935, heads the second early group of strawberry-growing states. Two-thirds of these came north by truck. Tennessee, which markets practically its whole crop in May, shipped 962 car lots in 1935. Virginia accounted for 1,139 car lots. Arkansas used to be in this group, but the drought of 1934 destroyed most of the strawberry beds.

April and May see a steady flow of strawberries from these "second early" states to markets where "home-grown" berries are not yet ripe. In May and June, states bordering the Mason and Dixon line appease the American appetite for strawberries. Maryland grows most of its berries on the eastern shore of Chesapeake Bay, and this past season shipped 1,182 car lots in trucks as compared with 228 car lots by rail or water.

The strawberry season changes abruptly in July. Late berries are available in the northern tier of states, particularly Wisconsin, and in California with a few car lots from Canada as the United States crop comes to an end. No shipments were listed for August 1935. California berries appear again on the west coast, however, in September, October, and November.

Prize-Winning Apples

OTTAWA, Canada.—Canadian apples, which are famous all over the world for their delightful flavor and fine quality, made a good showing at the Imperial Fruit Show at Liverpool, England, this year when Canadian exhibitors won 23 prizes. British Columbia growers won six first prizes, five seconds and two thirds, while Nova Scotia apples took seven firsts and three seconds. Ontario, Quebec and New Brunswick, the other Canadian provinces producing apples in commercial quantities, did not compete.

Apple growing in Canada dates back to the early pioneer days. History records the establishment of apple and pear orchards in the first settlements in Nova Scotia over three hundred years ago by French settlers, and the Annapolis Valley, made famous by Longfellow in his immortal poem, "Evangeline," has for many generations been one of the most widely known apple-producing sections in North America. In the Province of Quebec there are records of apples growing 300 years ago. In Ontario the first apple trees were

planted about 1760, and in British Columbia about 1850.

The Canadian climate is well suited to the production of high quality apples, and the industry, originally intended to provide apples, apple cider and vinegar for home consumption has developed to such an extent that Canadian apples now find their way to practically all parts of the world. In 1935 the Canadian crop totalled 4,432,700 barrels, and exports to 44 countries included 2,541,217 barrels of fresh apples.

In the early days of apple growing in Canada little attention was paid to varieties; apples were just apples. Improvement in transportation and storage facilities, the development of export and home markets, and more knowledge gained of the market demand were accompanied by experimental and research work designed to develop the most suitable varieties and the best methods of growing and handling. There are now in Canada good varieties of apples with keeping qualities which enable them to be stored and made available for consumption through practically the entire year.

Pasture or Forest?

(*From page* 11)

other localities in the Northeast, potash appears to be as essential to pasture improvement as lime, and in many cases the clover-grass association does not provide ample nitrogen for the latter species. It is important for the farmer to learn how best to proceed to improve his pastures, and if the experimental data on the matter is not clear for his locality or soil type he can probably find out with a simple test of his own.

It is pertinent that brush species and forest will eventually dominate the soils of the region, if control measures are not adopted. Tillage, mowing, and heavy grazing are excellent methods of brush control. Because of lack of grass in the pasture, heavy grazing is not possible, and then brush gains a foothold, which starts the land again to forest. Lack of knowledge of underlying principles has cost the profitable use of much land that would otherwise have been good pasture. Since there is a shortage of pasture in the region, it appears important to apply land-use principles to the problem, segregate the better pasture land from the forest, and insure its perpetuation by proper fertility and management, and then keep the cows from the woodlot for the benefit of the animals as well as the reproduction and growth of the tree species there.

Except for those pastures that have been treated, all are on the down grade. There is still time to salvage much of the better land and keep it profitably in grass and clover species. From the standpoint of the continuation of a profitable dairy business in the Northeast, g o o d pastures are essential.

The Irish foreman found one of his men sleeping in the shade.

"Slape on, ye idle spalpeen," he said, "slape on. So long as ye slape ye've got a job; but whin ye wake up, ye're out of wurrk."

Vacationist: "Any big men born here?"

Dare County Native: "Nope. Not very progressive 'round here; best we kin do is babies. Diff'rent in the city, I s'pose."

The Drought and Its Effects on Corn Prices

(*From page* 22)

The prospect of an improved crop in that year lured prices in August, September, and October somewhat below those of the first half of the year and then noticeably below during November and December. During December, 1935, the price of corn averaged 58 cents, compared with 92 cents in the previous January, a decline of 34 cents per bushel, or approximately 37 per cent. Again, we see that the corn markets behaved in almost the same manner in 1935 as they did 33 years earlier under similar conditions.

Apparently, an increase in the corn crop of 1,000,000,000 bushels following crop failure results in a reduction in corn prices of approximately 35 per cent. If the prices of corn during the coming winter should be roughly 90 cents per bushel, then corn producers, if they expect the 1937 crop to be 1,000,000,000 bushels greater than in 1936, had better anticipate corn prices 30-35 per cent lower in December 1937, than in December 1936.

Corn-Hog Ratio

Hog prices are determined primarily by what consumers are able to pay for pork. Ultimately, however, hog prices determine corn prices. This has developed what is commonly known as the corn-hog ratio. Ordinarily, the farm price of 23 bushels of corn is equal to the price of a 200-pound hog. In other words, the price of 11½ bushels of corn equals the price per hundred pounds for hogs. When hogs are $10 per hundred, as they were during a great part of last year, corn should be worth 90 cents per bushel. On this basis it will not be difficult to predict hog prices in 1937, particularly after weather conditions this spring are known.

What Makes the Red Hills Red

(*From page* 15)

As we wonder at the havoc wrought by the continuance of practices instituted in an earlier day, however, we must blame ourselves unless drastic and effective action is taken to protect this land.

Used Poor Land

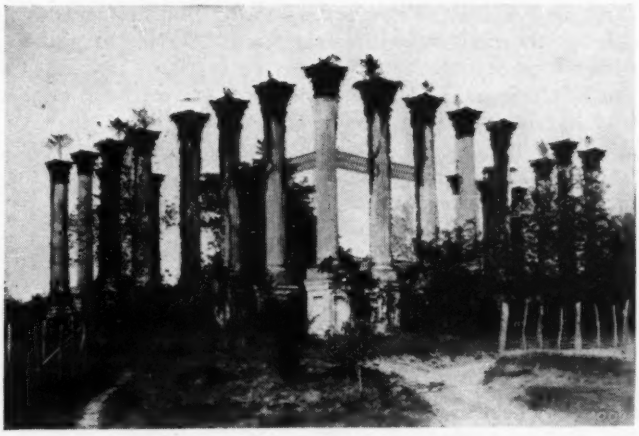
Erosion and war are closely related. During the World War the urge to produce more food and fibre for our own and allied armies stimulated the cultivation of steeper slopes, gave erosion an even stronger foothold. The gradual slopes, the steeper slopes, and finally most any hillside that could give footing to a mule, were cultivated.

The solution of the erosion problem no longer lies in moving to new land —there is none. Now the land must be protected against further damage, must be rebuilt insofar as possible. This is the purpose of the program inaugurated by the Soil Conservation Service.

It is a nation-wide program, and on typical watersheds throughout the agricultural sections of the country the Soil Conservation Service has under way demonstrations of erosion control. Every known method for controlling erosion is being applied in these areas to show farmers what they may do on their own farms to protect their land.

There are 31 of these demonstration areas in Virginia, North Carolina,

South Carolina, Georgia, Florida, Alabama, and Mississippi. Most of them are located in the Piedmont where erosion is most severe. Others are in the more rolling sections of the Coastal Plains and adjacent areas. There are also in this region 79 CCC camps assigned to the Soil Conservation Service actively engaged in erosion control work.



"Windsor Ruins." This 110-room mansion in Mississippi was built before the Civil War. Fertile land made such plantation homes; erosion results in their abandonment and decay.

Farmers on these demonstration areas agree to cooperate with the Soil Conservation Service in applying various methods of erosion control. New methods for erosion control are developed and applied in a coordinated program including engineering devices and vegetation.

Control Measures

In cooperation with the Extension Service, the Soil Conservation Service is encouraging farmers throughout the South to apply effective methods of erosion control on their own land.

Once a farm is surveyed and the correct practices to be applied on that farm are determined, cultivated fields on gradual slopes are terraced. The terraces carry excess surface water away slowly without giving it a chance to gain too much velocity. Water in rapid motion does the damage. If the motion can be reduced, little damage is done. It must not be thought that terraces are relied upon alone. They are supported by vegetation such as rotations, strip crops, and close-growing crops are planted wherever possible.

Steeper slopes that probably never should have been cultivated are planted to trees or devoted to permanent pasture. Man gives nature a hand in restoring her own protection against erosion. Cover crops are used to protect exposed soils through the winter when most rain falls, when soils are most vulnerable to the processes of erosion. Rotations embracing a maximum of soil building and close-growing crops are put into effect. Gullies are stabilized with grasses, kudzu, trees, and check dams. Erosion has removed so much fertility from many soils that fertilizers must be applied to insure the growth of cover crops.

Engineering Aspects

The construction of terraces involves further problems which the engineers are meeting effectively. Terrace outlets are made permanent with various devices, among the most important being vegetative treatment. The terraces themselves drain into outlet channels protected with grasses and check dams to make sure that these channels won't become gullies during some heavy rain.

Farmers on the demonstration areas are shown how they can alternate strips of close-growing crops with strips of clean-cultivated crops on sloping lands. This practice of strip-cropping greatly diminishes the susceptibility of the soil to washing.

As an incident to the program of soil conservation, wild life, the kind with wings or four legs, is given specific attention. The development of wild life is related to erosion control in that a number of erosion control practices may be modified slightly to encourage the habitation of quail and other desirable birds and animals. While attractive to wild life, vegetation need be no less effective in controlling erosion.

Economic Aspects

Economic aspects of erosion control are always kept in mind. For instance, the trees are chosen not only for their desirability in preventing erosion, but also for their utility.

Every interested farmer in the Southeast is being urged by the Extension Service and the Soil Conservation Service to visit one of the demonstration areas. Through observation, farmers can familiarize themselves with measures they can apply to protect their own fields. Through the use of these methods they can protect themselves against the realities that have already been faced by altogether too many families, having to move off a farm too badly eroded to be of any further use. The demonstrations are here for that important purpose, as a working area for specialists trained in erosion control. With the coordination of good cropping systems, forestry, grasses, and engineering practices, these specialists are striving to show all interested farmers and other persons that it takes more than a first mortgage to hold the land.

Give Peat Soils Required Potash

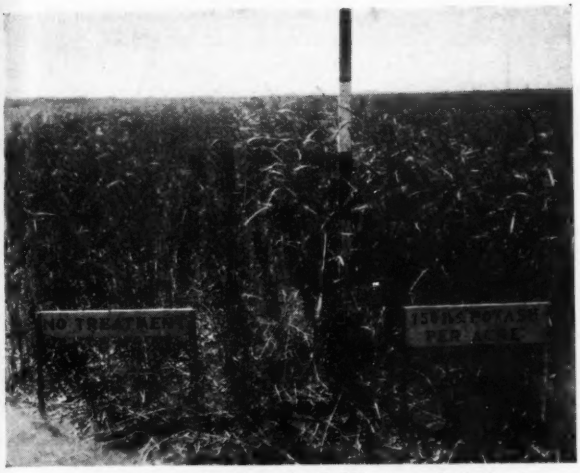
(*From page* 17)

freeze-up. If no stand is thus secured, reseeding is made the following spring.

3. Reed canary grass hay or seeding.
4. Reed canary grass hay.

Based on the Coddington results, Mr. Albert advises farmers on drained peat in central Wisconsin to apply 100 pounds of 50 per cent potash salts for

Sunflowers grown for silage on deep peat soil in central Wisconsin where frost hazard of corn is great. The field received the following treatment—Left: 8 tons manure, 145 lbs. triple superphosphate, and 150 lbs. muriate of potash. Right: No treatment.



Rye grown in deep peat soil on the Coddington sub-station farm. Left: No treatment. Right: Potash treatment.

each year of the rotation. The preferred practice is to apply 200 pounds per acre every second year or the entire rotational application to intensively cultivated crops. When the roughages fed to livestock are made up of crops grown where a normal supply of potassium is present, the manure produced has a potassium content which makes a 10-ton application equivalent, as potash fertilizer, to 200 pounds of 50 per cent potash. If crops have been potash-starved, the manure produced will have a very low potassium fertilization value.

Alabama's "Garden Spot"

(*From page* 20)

6-8-4 fertilizer are applied. The five-year average yield following these fertilizers was 82 crates per acre. At $1 per crate, the returns were $68.86 per acre above the fertilizer cost. The farmers have been using 400 to 500 pounds of a complete fertilizer for a number of years.

Experiments show that the highest yields of green beans are produced when fertilized with 800 pounds of 6-10-4 or 800 pounds of 4-10-4 supplemented with 100 to 120 pounds of nitrate as a side application. The yields following the 800-pound application were between 150 and 161 bushels per acre, and the returns above fertilizer and cost were between $140 and $150 per acre.

For many years the county has been a large producer of early cucumbers for shipment. Most of these are produced on tracts of land of from 1 to 5 acres, however, a few growers raise as many as 20 to 35 acres. The ordinary yield is from 300 to 400 crates to the acre. Most of the farmers fertilize their cucumbers with 1,500 to 2,000 pounds of 4-10-7. Some side-dress with 200 to 300 pounds of nitrate of soda.

The experiments show that the most profitable returns from cabbage are made where they receive 1,500 pounds of 12-10-6 fertilizer per acre. Only one-third, or 4 per cent, of the total nitrogen is applied at planting time, while the other two-thirds is applied as a side-dressing. The first application of nitrogen is usually ammonium sulphate, while the second application is nitrate. All phosphorus and potash are applied at planting time. "Another way of applying the correct amount of fertilizer is by using 1,500 pounds of a 4-10-6 or 4-10-7 at planting time and then side-dressing with 700 pounds of nitrate per acre." The average production following 1,500 pounds of 12-10-6 was 8.09 tons per acre.

Calculated at $20 per ton, the returns were $130.89 above the cost of fertilizer.

A total of 415 western mares have been bought by Baldwin County farmers within the past 2 years, reports E. E. Hale, county agent. A majority of the mares are being used to raise mule colts. Three good jacks have also been placed in the county. The mares and jacks have been shipped into the county on a cooperative basis and sold to farmers at cost.

"Modern equipment is being used extensively in the production of truck crops," according to Mr. Hale. "Farmers are equipping themselves with two-row planters and tractors equipped to cultivate and dig two rows at a time."

A very noticeable feature of Baldwin County farm land is the lack of stumps. As soon as a new field is cleared the stumps are dug out so that improved farm machinery can be used. Most of the land is practically level, therefore, soil erosion is not the problem that it is in other sections of the state and nation.

Fertilizer Distributors For Seed Drills

(*From page* 8)

whereby the final product was of a much more granular nature, and of a better drillability. Regarding attachments, an entirely new machine was developed, of greater simplicity, and much less weight, which allowed them to be marketed at a price far lower than any attachments heretofore, enabling even the smallest farmer to purchase. The new attachment is built to accurately distribute high-analysis, granular fertilizers.

Machine Now Adaptable

The new machine is entirely universal in that it can be adapted to any make of seed drill without the use of special adapting parts, and it does not require any change in the existing parts of the drill. It can be set up and attached to the general run of seed drills in less than an hour, and even more readily detached. The machine can be fitted either to the front or rear of the grain box, but in the former case, as a rule, new grain conductor tubes are necessary.

Nearly 3,000 of these new attachments were distributed in the spring of 1935, and met with such universal satisfaction in the hands of users that the same machine, with hardly any changes, will be marketed in future years. Fig. 2 gives a very good idea of how the Universal attachment fits to the ordinary high-wheel grain drill.

The attachment is merely hooked on to the front or rear of the grain box by suitable hooks provided for wood or steel boxes.

The picture shows the attachment mounted behind the grain box on a drill having a steel grain box. The gears and sprockets on the end of the attachment are those used for driving the fertilizer feed shaft and can be changed to give various application rates of feeding. Variations in rate of feed are secured by change of speed from an opening of constant size rather than the method of opening or closing a slot.

With the addition of the spare sprocket and gear shown on top of the fertilizer box, 36 changes in application rates can be obtained, varying between 12 and 120 pounds per acre. The drive for the attachment, when mounted on all types of drills using the fluted-roll grain feed, is taken from the drill grain shaft by mounting thereon a small split chain sprocket. On drills which employ a variable speed grain shaft for changes in rate

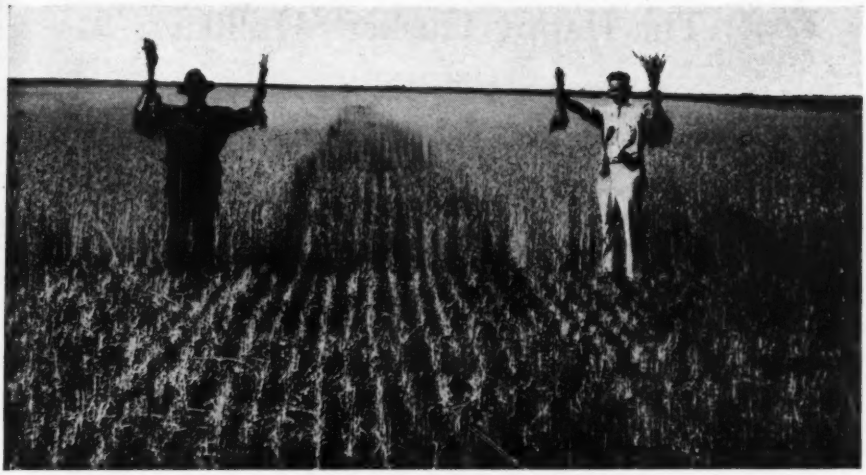


Fig. 4—Field in Saskatchewan showing beneficial effects of fertilizers under dry conditions. Note the unfertilized drill row in center.

of sowing, the attachment drive is taken from the main drill axle, so that the fertilizer feeding rate shall remain constant even if changes are made in the grain-seeding rate.

The attachment when fully assembled on the average 20-run drill weighs about 120 pounds and will carry sufficient fertilizer for 3 miles at the usual application rate of 35 pounds per acre. Where greater mileage than this is required between fillings, tip top boxes are supplied which can be quickly attached to the standard fertilizer box, increasing the mileage to five under the same conditions.

Fertilizer boxes are made in 6-inch spacing to suit the majority of high-wheel grain drills, and also in 7-inch, 8-inch, 9-inch, and 10-inch spacing suitable for press drills, tiller combines, and one-way disc seeders.

The Universal fertilizer attachment is an answer to the Canadian prairie needs for utilizing the thousands of grain drills now in use on the prairies. By its use, farmers are realizing higher yields and higher quality cereal crops. More rapid early growth and earlier maturity mean less losses from early fall frosts and rusts. The cereal fertilization becomes an actual reality ranging in costs from 70c to $1.20 per acre. Besides lower unit production costs and higher quality yields, Canadian farmers are realizing that intelligent fertilization, plus good seed and good farming practices, are an insurance with which they are more likely to combat hazards of late spring frosts, soil drifting, weed competition, plant and insect pests, early fall frosts, and adverse harvesting weather. They are realizing that in a cold climate, with short growing seasons, the use of fertilizers many times is the added help to crop growth that turns crops from a partial or complete failure to a profit.

Grass Cheap Dairy Feed

"Pasture grasses furnish the dairyman with the cheapest source of feed," says the Bureau of Dairy Industry, United States Department of Agriculture. Tabulation of costs of growing various crops, gathered from 16 states, showed grasses cost the farmer only 64 cents for each 100 pounds of digestible nutrients, compared to 83 cents for alfalfa, 97 cents for clover hay, and $1.54 for corn silate. Oats are at the other extreme with a cost of $2.02.

The Happy Husker's Holiday

(*From page 5*)

Kernel, kernel, kernel,
Cob, cob, cob;
From the meadows vernal
We can feed a mob;
Bang board, bang board,
Grind it in a mill,
Good for yellow corn pone,
Good for mush or swill.

It may be said in parenthesis that Silky Krug did not relish this outburst much, as she thought the lines were not complimentary to the testimonials; but she just couldn't have her way in everything.

UPON call of the chairman, the next person to come forward for honors was none other than Professor Teosinte Boone, known in every barnyard for his noble contributions to the science and practice of animal husbandry as a fine art. Leaming handed him a cow-hide brief case and read the following sentiment from the "illuminated corn husk":

From Proverbs, Chapter 27: "Be thou diligent to know the state of thy flocks, and look well to thy herds. For riches are not forever: and doth the crown endure to every generation? The hay appeareth, and the tender grass sheweth itself, and herbs of the mountains are gathered. The lambs are for thy clothing, and the goats are the price of the field. And thou shalt have goat's milk enough for thy food, for the food of thy household, and for the maintenance of thy maidens."

Professor Boone almost shed tears. He vowed that there was no word of which he was cognizant in feeds and feeding or the coefficients of nutrition which could begin to express the fulness of his heart. He offered to give them a lecture then and there on the Germ Plasm Progress in Proven Sire Indices, but Grandpaw Murdock started to snore before the Professor got shifted into third gear of the introduction, and they had to start the harmonica band to wake him up.

Having passed this danger spot, they quickly went on to the next tribute, which was one accorded to B. B. (Bloody Butcher) Mosby, the talented and energetic cooperative organizer, exhorter and leader. To him Leaming extended these phrases:

From Psalms: "Thou calledst me in time of trouble and I delivered thee. Oh, that my people had hearkened unto me and walked in my ways. I should have subdued their enemies and turned my hand against their adversaries."

The harmonica band and the Huskers' yell had to begin mighty quick on signal this time, or else the rest of the evening would have been sadly bereft of good will for the absent middlemen and commission merchants, toward whom on such mellow occasions all resentful bitterness should be forgotten. So the committee wrung B. B.'s freckled hand and led him to a reserved seat, where he sat rather uneasily the rest of the night.

"OUR next tribute goes, as it should, to the presiding genius of this class room, the votaress who guides the destinies of our young and tender shoots," announced Leaming, as he called for Miss Dentura Wimple, and picked out the proper scroll to hand her. Quite according to the ancient British custom, Corn Corners youngsters shouted, "'Ear, 'ear, 'ear!" as she received the prize.

Chapter 9 of Proverbs: "Wisdom has builded her house. . . . Whoso is simple, let him turn in hither: as for him that wanteth understanding, she saith unto him, come, eat of the bread and drink of the wine which I have

mingled. Forsake the foolish, and live; and go in the way of understanding."

So overcome was the maiden teacher that she went to her desk, unlocked the secret drawer and removed a huge quarter-sawed oak ruler. She carried the ruler to the redhot stove, into which she threw it with a flourish. Dusting off her mits, she said:

"This is what is known as a symbolic gesture in return for your generosity, and in due appreciation of the season. However, be it known by these presents, that I have made *no* binding New Year resolutions *not* to maintain decorum within these walls as per usual custom. It's up to you, boys!"

AFTER a brief pause to let this sink into the skulls of the grade members, Early Leaming called for Aleurone Rustler, the energetic and ambitious young college graduate nurse and home specialist, now serving the county as demonstration agent. He handed her a husk on which were these sentences:

From Ezekiel, Chapter 4: "Take thou also unto thee wheat, and barley, and beans, and lentils, and millet, and fitches, and put them in one vessel, and make thee bread thereof. . . . And thy meat which thou shalt eat shall be by weight, 20 shekels a day: from time to time shalt thou eat it. Thou shalt drink also water by measure, the sixth part of an hin. . . . And they shall eat bread by weight, and with care; and they shall drink water by measure, and with astonishment."

"Many thanks indeed," replied the buxom young demonstrator. "All this is splendid stuff, and I can subscribe to that last part here where it says 'they shall drink water with astonishment,' because from some of the carryin's on in this section, water would be a rare thirst quencher. But what I wish to say is this: that there is one person on my rounds who deserves more of a tribute than any coming my way, and I have asked her to be here—only she can't, being laid up in the hospital."

A CHORUS of approval from the audience induced the lady to continue.

"Knowing how hard and faithfully this poor soul has struggled during a year of drought and difficulty, and how she kept off the relief rolls by taking in a passel of uppity summer boarders, I could hardly accept this honor tonight without sharing honors with her. This is because she is so typical of all the better women folks in this community, who would do the same thing if they were up against it like she was. Her husband got gored by a bull last winter and she was left with ten children, from six months old to sixteen years. So she's worn out and had to go to the hospital, and you needn't ask if it's the eleventh one either, 'cause it isn't—not yet. But I'm not so sure who'll pay the bill for this rest cure she's taking. As for me, I'm willing to toss in $5 of my salary, and forget those gloves and ribbons I wanted. Anyhow, here's the scroll we have for her, and Silky helped me prepare it on a silk sampler. There's a lot more to the verses, but these are enough to suit the occasion. Listen:

PROVERBS, Chapter 31: "Who can find a virtuous woman? For her price is far above rubies. The heart of her husband doth safely trust in her, so that he shall have no need of spoil. She will do him good and not evil all the days of her life. . . . She riseth also while it is yet night, and giveth meat to her household, and a portion to her maidens. . . . She layeth her hands to the spindle, and her hands hold the distaff.

"She openeth her mouth with wisdom; and in her tongue is the law of kindness. She looketh well to the ways of her household, and eateth not the bread of idleness.

"Many daughters have done virtuously, but thou excellest them all. . . . Give her the fruit of her hands; and let her own works praise her in the gates."

HARDLY had she ceased speaking than Kernel Krug arose and came forward with a bushel basket. Facing the Happy Huskers he declared, with a wide wave of emphasis:

"My idea is, folks, that all the gifts we have given out tonight, except those to the little nubbins, should be collected in one parcel and be sent over to the hospital. This good woman can call in her numerous brood of children and let them divide the spoils." He put the question after a first and second was heard, and it carried, echoed with a Happy Husker yell.

Then the unusual happened. No other than Neal Paymaster himself, dour Scot though he is, capped the climax of wonders by asking if the society might not like to vote 50 cents for a bunch of flowers or a Christmas wreath to decorate the parcel. Indeed, Neal went even further than that. He dug up a quarter and started to pass the hat—using Leaming's cap to save wear and tear on his own. Miss Wimple grabbed a sheet of foolscap and began the rounds collecting signatures of well-wishing to send along with the donation. Zea Mays and Silky Krug packed up a box of candy and nicknacks and tucked it into the basket along with the gifts. Everybody was running in circles, coins were jingling and faces were radiant. Even Grandpaw Murdock got real excited when they hollered into his ear and told him what the fracas was about.

You might say it was almost unanimous, this spirit of good fellowship in doing the right thing at the right time. So typical is it of Corn Corners and the Happy Huskers, that I would leave them here without further ado, but they say bright things stand out best by way of contrasts, so let's finish it that way.

Just as the basket was filled and about to be tied up and as Neal Paymaster had collected the last farthing from the club, one mealy-mouthed member, called "Blacky Musk," a little withered and wizened specimen, cordially disliked by all and sundry, interposed as follows:

"I'm one of the oldest and steadiest members of this yere outfit," he shouted. "I've paid dues and attended reg'lar, and never had no fuss made over me. I'm old and alone and ought to git a gift. At least I should a had a sentiment writ out fer me. What say? Some of these yere smart-alecs from fresh-water colleges might hand me a husk with some verses on it—seein' they are passin' 'em around so free like."

WITHOUT disturbing the gladsome ending of the program by further argument with Black Musk, the Board of Directors consulted a minute with Grandpaw Murdock, a perfect wizard on Bible lore. Hastily scribbling on a piece of husk, they handed the querulous critic a rather cryptic sentence and gently pushed him rearward. On the husk was written: "Such folks as you should take your answer from Chapter 15 of the book of Job, verse 2." As nobody stopped to find out what this sentiment is, and as nobody cares now except you and me and Bluck Musk, perhaps you will take time out to reach for the Good Book and see for yourself.

And along with the custom and the pleasure of the times, let me keep ardent step with the Happy Huskers in wishing *you* and *you* and *all* of you a very merry and heart-warming holiday.

Youth — I've never seen such dreamy eyes!

Sweet Young Thing—You've never stayed quite so late before.

WHO ENRICHES THE SOIL ENRICHES LIFE

COTTON is truly "all things to all men." To these pleasure-seeking sailors it is a harness for the wind, to industry it is raw material with countless uses, to the Southern farmer it is cash income and to the fertilizer man it is a market of vital importance.

Fertilizer is the life blood of the cotton plant. To provide fertilizer that produces bigger yields of better quality cotton at lower cost per pound is to serve progress.

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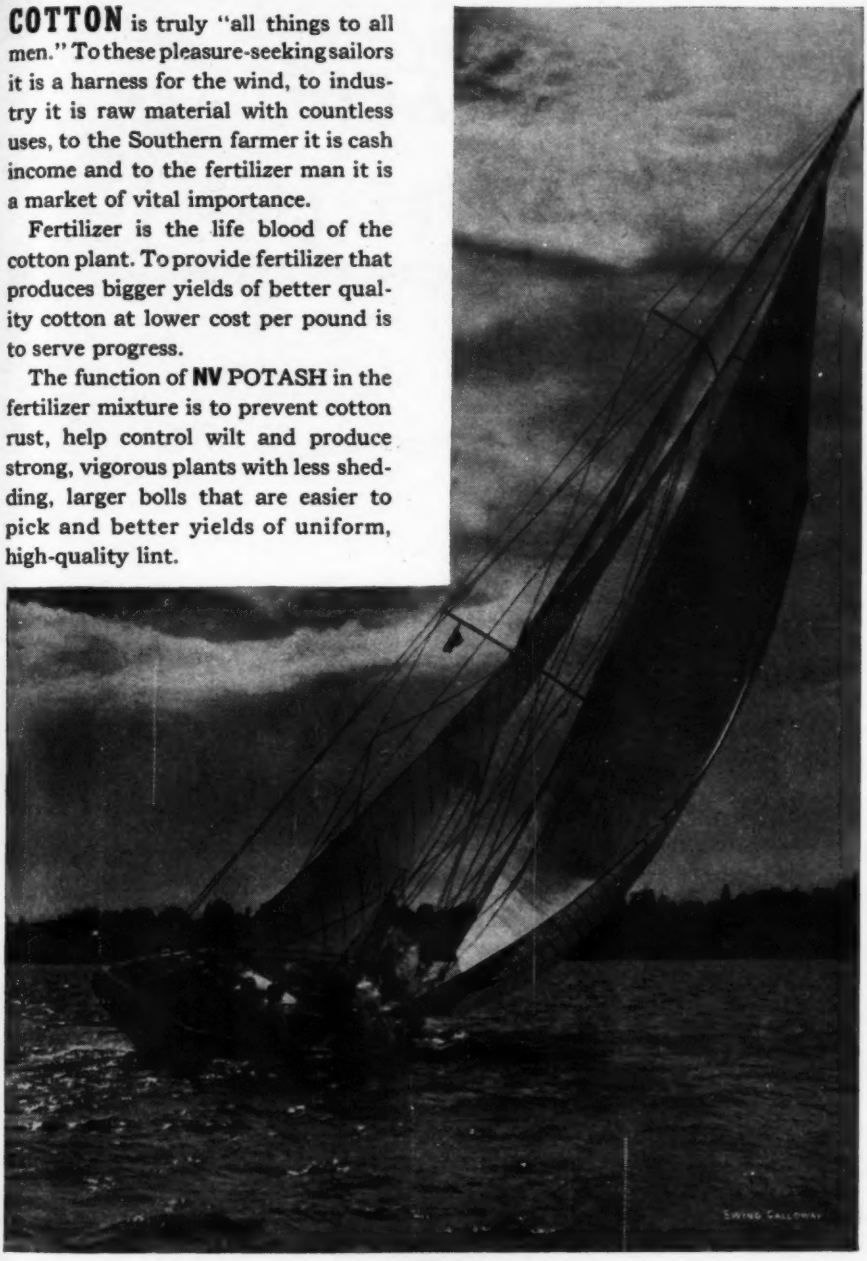

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A-35

O JOY!

A colored woman demanded a refund on a pair of hose recently purchased. The floorwalker asked:

"Madam, did they not come up to your expectations?"

"Lordy, no," she answered. "Dey hardly come up to my knees."

She: "Every time I come to California I have to discard my heavy undies. You know, I'm from Saskatchewan."

He: "Is that so? I'm from Missouri."

NO VALUE

A farmer who was always complaining about everything, was showing the result of fine growing weather and superior skill in cultivating, when his visitor said to him: "Well, you ought to be satisfied with such crops as these. There is certainly nothing lacking. You have nothing to kick about this year."

The old farmer stood in a meditative mood for a minute, then replied: "Well, you know, son, such crops as these are pesky hard on the soil."

A young lady and her aunt returning home from work on pay day, were relieved of their money by a stick-up man. The young lady, rushing over to a policeman, exclaimed "Ive been robbed of my pay and my aunt's pay."

"What do you mean by 'antspa'?" said the copper. "Cut out the hog Latin and tell me what happened."

French Maid (screaming in the night): "Help, help, Madame, help!"

Madame (awakening): "Be brave, Mimi, I'll call my husband and send him there."

Maid: "But, Madame, that's just it."

CHRISTMAS CHEER

Mrs. Jones: "Look, dear, how picturesque; the Browns are bringing in a Yule log."

Mr. Jones: "Yule log, my eye; that's Brown."

"I suppose you carry a memento of some sort in that locket of yours?"

"Yes, it's a lock of my husband's hair."

"But your husband is still alive."

"Yes, but his hair is gone."

CHIVALROUS

Jimmy, age nine, was escorting his younger sister, Ruth, to school. Now, although Ruth was more than a year younger than Jimmy, she was much better read.

On the way Ruth slipped and tore her new frock. "Jimmy," she said, "if you want to show people your chivalry, you will give me that pin in your trousers."

Jimmy, blushing furiously, retorted: "If you think I'm gonna show my—my chivalry just so you won't have to show your petticoat, you're off your block. Go on home and get yourself a pin."

BUT WE CAN CONTROL THE SOIL

Sunshine, rain and the proper soil; these three help to determine crop success. We have no control of sunshine, and except through expensive irrigation systems, little control of moisture. But, thanks to modern chemistry, we can control soil fertility. All that is required is the adequate use of complete fertilizer containing the proper amount of Potash, and applying the number of pounds per acre as recommended by your State Experiment Station.

As to Potash, you naturally will want to use a product uniformly high in quality, and one that will blend readily into your complete fertilizer mixtures. There is one easy way to be sure of all of these points: specify

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